7 April 1998

TO WHOM IT MAY CONCERN:

The following draft statement of work for upcoming solicitation N65236-98-R-0361 is provided for industry comment. All comments are to be provided in writing **only** to the attention of April Miller, Code 1116AM, fax (843) 974-5947, or e-mail "millera@spawar.navy.mil".

NOTE:

(1) Further information regarding this procurement can be found in the Commerce Business Daily (CBD) presolicitation synopsis notice published on 1 April 1998.

(2) The solicitation is anticipated to be released in May 1998.

****DRAFT****
STATEMENT OF WORK
FOR
SYSTEM ENGINEERING AND TECHNICAL SUPPORT

N65236-98-R-0361

INDEX

SECTION C: DESCRIPTION/SPECIFICATION

1. INTRODUCTION.

The Command Control Communication and Intelligent (C^4I) System Division is tasked by the Space and Naval Warfare Systems Command (SPAWAR) to provide system engineering, software development, configuration management, test, fleet introduction, product improvement, quality assurance, logistic, and life cycle management support to the Tactical Support Center (TSC), TSC Communications Module (TCOMM), Mobile Operational Command Center (MOCC), Mobile Ashore Support Terminal (MAST), Mobile Integrated Command Facility (MICFAC), Tactical Combat Operations (TCO), C^4I related systems and associated interface systems, Air Force DCCS systems (i.e., UPT, CMP & GMP), Unit Operational Command (UOC), Common Air Command and Control Systems (CAC2S***)*** with respective sub-systems that include: [Cooperative Engagement Capability (CEC), Theater Battle Management Core System (TBMCS), Theater Ballistic Missile Defense (TBMD), Multi Source Correlation, Theater Air Defense, Anti Air Warfare, and Advance Combat Direction System***]***, Global Command and Control System (GCCS), Navy Satellite Control Station (NSCS) Interface Unit (NIU), JMCIS video systems as AN/SXQ-8 SCCTV(Secure Closed Circuit Television) and NTCS-A IVS (Integrated Video System), and other Mobile and fixed site C4ISR systems and related Foreign Military Sales (FMS) programs and projects.

1.1. Purpose. This contract is to provide the C^4I Division with the necessary engineering and technical support services required to augment C^4I Division program/project managers and engineers in fulfilling SPAWAR tasking for the development, test and evaluation, and life cycle support of TSC, C^4I, C^3 related interface systems, subsystems and equipment, and associated FMS programs and projects.

1.2 Scope. The contractor shall provide engineering and technical support services to the C^4I Division, TSC, TCOMM, MOCC, MICFAC, MAST, TCO, JMCIS Video Systems, DCCS Air Force System, UOC, GCCS, CAC2S, C^4I, and other Mobile and fixed site C4ISR systems, FMS and related interface systems development, procurement, fleet introduction, product improvement test and evaluation, life cycle management and FMS programs, both present and future. The C^4I programs are comprised of a number of communication, command and control systems and equipment consisting of hardware and software elements, each in various stages of development. This support shall consist of the application of recognized scientific and technical procedures in the conduct of system engineering, configuration management, quality assurance, logistics and program management functions relative to assigned tasking.

1.3 Background. The Space and Naval Warfare System Command (PMW171), which has cognizance over all TSC, C^4I, C^3 and related FMS Programs, has designated SPAWAR Systems Center, Charleston as the primary activity for providing TAC/Mobile systems engineering, test and evaluation, configuration management, quality assurance, logistics and training support to TSC, TCOMM, Mobile System, C^4I, associated interface systems, subsystems and equipment and related FMS development and life cycle support programs.

In addition, SPAWAR Systems Center, Charleston acts as a technical advisor to the PMW-171 regarding overall requirements for the TSC and the C^4I programs.

2.0 APPLICABLE DOCUMENTS.

2.1 Specification and Standards. The Specifications and Standards listed in this Statement of Work (SOW) are supplied for a purpose of Guidance ONLY**.** Note: Reference to these documents elsewhere within the body of the SOW shall be by their basic number only:

SPECIFICATIONS	**TITLE**
MIL-M-24784/18	Manual, Technical, Equipment and Systems Content, Requirements for
MIL-P-24534A	Planned Maintenance System; Development of Maintenance Requirement Cards, Maintenance Index Pages, and Associated Documentation,
MIL-M-85337A	Manuals, Technical: Quality Assurance Program: Requirements for
MIL-PRF-49506	DoD Requirements for a Logistic Support Analysis Record

STANDARDS

MIL-STD-100E (3)	Engineering, Drawing Practices (Military Standard)
MIL-STD-498	Software Development and Document
DoD-STD-5200.28-STD	DoD Trusted Computer System Evaluation Criteria
EIA/IS-649	National Consensus Standards for Configuration Management was adopted 22 Nov 96
MIL-STD-1472D (3)	Human Engineering Design Criteria for Military Systems, Equipment and Systems
MIL-STD-961S (1)	Contents of the Data Item Description (DID)
MIL-STD-1379D	Input/Output Interfaces Standard Digital Data, Navy Systems

STANDARDS (continued)	**TITLE**
MIL-STD-470B	Maintainability Program for Systems and Equipment
HANDBOOKS	
MIL-HDBK-1379D	Military Training Programs Other Publications.
MIL-HDBK-472 Notice 1	Maintainability Program for Systems and Equipment
MIL-HDBK-454	General Requirements for Electronics Equipment
OTHER PUBLICATIONS	
NATO-STANAG-4283	Maritime Operation Center Interoperability
NAVAIRINST 5100.3C	Naval Aviation Systems Safety Program
OPNAVINST 4790.4C	Ships 3M Manual
OPNAVINST 5239.1A	Ch. 1 DON IT Security Program
OPSEC 411.2	

2.2 Availability of Documents. Military Specifications may be obtained from the US Naval Publications and Forms Center. C^4I documents may be obtained from the procuring activity. Commercial documents may be obtained from the organization issuing those documents.

2.3 Precedence of Documents. When the requirements of the contract, this SOW or applicable subsidiary specification are in conflict, the following precedence shall apply.

2.3.1 Contract. The contract shall have precedence over any specification.

2.3.2 Statement of Work. This SOW shall have precedence over all applicable subsidiary specifications. Any deviation from this SOW or from subsidiary specifications, where applicable, shall be specifically approved in writing by the contracting officer.

2.3.3 Referenced Specifications. Any referenced specification shall have precedence over any subsidiary specifications referenced therein. All referenced specifications shall apply to the extent specified.

3.0 TECHNICAL REQUIREMENTS.

3.1 General. The contractor shall provide engineering and technical support in the software/hardware development, test and evaluation, training, and life cycle maintenance and logistic support of TSC, TCOMM, MOCC, MICFAC, MAST,UOC, CAS2S, GCCS, TCO, Video Systems Program, Air Force DCCS projects, and other Mobile and fixed site C^4ISR systems and related systems interface systems and associated Foreign Military Sales (FMS) programs. The types of support required under this contract includes: Systems Engineering, Software Development, Configuration Management, Quality Assurance, Material Control. Logistics, Training, and Program Management. Successful performance of this support will require knowledge and understanding of the following areas, systems, subsystems program and architecture include but not limited to:

a. Tactical Support Center (TSC)

b. TSC Communications (TCOMM)

c. AUTODIN, LDMX, RIXT, DDN, NIPRNET, SIPRNET, DMS Interface

d. Antisubmarine Warfare System (ASWS)

e. Operations Support System / Own Ship's Speed (OSS)

f. Global Command & Control System / Common Operating Environment (GCCS COE)

g. Circuit Exchange Terminal and Interface Remote Modules

h. SATCOM-OTCIXS/TADIXS A, TADIXS B, Voice

i. LINK-11 (HF-UHF), LINK-16 (UHF)

j. Satellite Communications Transceivers (AN/URC-110, AN/WSC-3, VICS, etc.)

k. RF Propagation and Analysis

l. Videoteleconference (VTC) Technology

m. LAN, MAN and WAN Technology

n. DAMA and MiniDAMA

o. UHF/SHF/EHF SATCOM

p. US Message Processing, Protocol and Communications

(JANAP 128, DOI-103, ACP-127, ACP-126M)

q. JMCIS 98

r. DCCS (formally NAVMACS II)

s. Mobile Operational Command Center (MOCC)

t. COMSEC Devices (KG-40, KG-58, ANDVT, KW-7, KY-65, KG-84A/C, Indicator or other Embedded COMSEC Requirement) and Applications

u. Spread Spectrum Communications Technology

v. TCP/IP, Ethernet, Routers

w. Mobile Ashore Support Terminal (MAST)

x. Tactical Combat Operations (TCO)

y. Mobile Integrated Command Facility (MICFAC)

z. AN/SXQ-8 SCCTV

aa. NTCS-A IVS

bb. P3/S-3 Aircraft Interface

cc. OSIS Baseline Upgrade / Operational Effectiveness Demonstration (OBU/OED)

dd. UOC

ee. CAC2S *and respective sub-systems that include: [CEC, TBMCS, TBMD, Multi Source Correlation, Theater Air Defense, Anti Air Warfare, and Advance Combat Direction System]*

ff. NIU

3.1.1 Task Management Plan. The contractor shall accomplish the tasks specified in paragraphs 3.2 through 3.12 when tasked, through the issuance of a delivery order, by the contracting officer.

3.1.2 Deliverable Product. The contractor shall develop and/or review the following supporting documents, ad defined by the TDL, SOW and CDRL Items as indicated.

DESCRIPTION	CDRL ITEM
Task Management Plan	A010

3.2 Task A: Systems Engineering Support.

3.2.1 Scope. The contractor shall provide system engineering support to C^4I Division, SPAWAR Systems Center, Charleston, Code 61 in the TSC, TCOMM, MOCC, UOC, CAS2S, GCCS, Air Force DCCS systems, NIU, LINK-11, LINK-16, MAST, MICFAC, TCO, FMS, and other Mobile and fixed site C^4ISR systems, and associated interface systems in the areas of Development, Test and Evaluation and Life Cycle Support Programs. This shall include performance of scientific analytical and engineering efforts necessary to transform operational needs into unique system performance parameters for evolution into improved system capabilities. Efforts include functions such a program planning, concept exploration, design development, test and evaluation, system integration, site installation and maintain the optimum capabilities in those systems.

3.2.1.1 Engineering Analysis. The contractor shall provide engineering analyses including requirements analysis, feasibility analysis, concept exploration, design analysis, impact assessment, and market research and evaluation.

a. Requirements Analysis. The contractor shall include examination of existing requirements for new TSC, TCS, TCOMM, MOCC, CAC2S, UOC, GCCS, NIU, LINK-11, LINK-16, MAST, MICFAC, TCO equipment's to define how to best meet such requirements. To make these analyses meaningful, the contractor should be knowledgeable of the following equipment, systems, procedures and architecture this includes but not limited to: OBU, OSS, OTCIXS, CUDIX, STREAMLINER, COMSEC, CRYPTO, or SPINTCOM, GCCS, DTC2, TAC-3, TAC-4; TACTICAL DATA LINKS, JMICS-98, USMTF, DMS, SIPERNET, CTAPS Remote, LINK-11, LINK-16, DCCS, C^3, and C^4. These analyses are required, as a minimum:

(1) Adequacy of existing or development equipment/systems in terms of current, as well as future requirements with normal growth considered.

(2) Operability in intended environment.

(3) Reliability in intended environment.

(4) Maintainability by qualified fleet personnel.

(5) Interoperability with other systems.

(6) Life cycle cost effectiveness.

b. **Feasibility Analysis.** The contractor shall include the performance of technical studies and analyses to ascertain the cost and feasibility implementing TSC systems engineering concepts. These analyses shall include evaluating engineering concepts to determine vulnerability to enemy Electronic Countermeasures (ECM). Enemy ECMs such as jamming, spoofing and imitative deception shall be considered and addressed.

c. **Development Analysis.** The contractor shall develop, update and review program planning technical documentation such as Program Management Plans (PMPs), Test and Evaluation Master Plans (TEMPs), and Software Development Plans (SDPs), Software Requirements (SRS), Software Test Plan (STP) as defined by the delivery order. The contractor shall provide the appropriate documentation, review comments and recommendation to the C^4I Division program/project manager.

d. **Technical Analysis.** The contractor shall provide technical analysis and support services during the system concept development and shall conduct in-depth analyses of proposed system enhancements, hardware and software trouble reports, associated system modification, hardware and software change requests, and changes to relate interface systems for potential impact on TSC, TCOMM, MOCC, MAST, MICFAC, UOC, CAC2S, GCCS, JMCIS Video systems, TCO, NIU, C^3, FMS, C^4ISR fixed and mobile site systems and associated interface systems, subsystems, equipment, and software. Efforts shall include:

(1) Review and evaluate of trouble reports and change requests for system, equipment and associated documentation and provide recommendations relative to feasibility and potential impact.

(2) Review and analyze current and future system operational and functional requirements.

(3) Evaluate existing systems and equipment relative to the capability to support these requirements and identify shortfalls.

(4) Evaluate system operability, reliability, and maintainability in the intended operational environment.

(5) Evaluate system interoperability with other TSC, C^4ISR mobile and fixed site systems or associated interface systems, equipment and software.

(6) Evaluate the maintenance support philosophy and requirements.

(7) Draft and update preliminary System Level Development Specifications.

e. **Design/Development Analysis.** The contractor shall include technical design and software analyses in support of the development of TSC, TCOMM, MOCC, UOC, CAC2S, GCCS, JMCIS Video Systems, DCCS, NIU, MAST, MICFAC and related C^3, C^4ISR system designs and related FMS programs and projects. These analyses shall consist but not limited to:

(1) A technical record outlining the historical development of the system design.

(2) Design and fabrication of test aids for use in test and evaluation of systems or equipment.

(3) Provide and definition of design inadequacies and alternatives.

(4) Specific evaluation results and an explanation of implication of this results.

(5) Design improvement alternative(s). (The analysis shall address trade-off and shall provide a recommended approach).

(6) System capabilities to meet design goals in an operational environment. This shall include identification of high-risk of low-performance areas, definition of alternate design methods, and recommendation of design modifications.

(7) System capability to operate interactively with both existing and forth coming systems. The contractor shall identify risks, alternatives, and modification recommendations.

f. **Design Impact.** The contractor's assessment shall include in-depth technical investigations of proposed changes, user problems or other directed efforts which impact the TSC, TCOMM, MOCC, MAST, MICFAC, TCO, UOC, CAC2C, GCCS, and C^4ISR mobile and fixed site systems and associated interface systems. These investigations shall address realistic engineering alternatives to satisfy the requested change, project implementation and support costs, and shall recommend the best overall solution to satisfy the desired capability.

g. **Market Research and Evaluation.** The contractor shall conduct a market search and perform an evaluation of commercial and/or military products (hardware or software) for use within the TSC, TCOMM, MOCC, MICFAC, MAST, UOC, CAC2S, GCCS, NIU and C^4I or associated interface programs. The contractor shall prepare a technical report in accordance with CDRL Item A004. The report shall identify and define the product's salient technical and physical features, possible operational applications within TSC or C^4I systems, existing hardware/software or system impacts, estimated implementation costs, similar

products available from other sources, and the recommended use of the product and/or alternative approaches.

3.2.1.2 Requirements Analysis. The contractor shall research, identify, define, evaluate, and document current and future C^4I, TSC, TCOMM, MOCC, MICFAC, TCO, MAST, UOC, GCCS, CAS2S and C^4I, FMS associated interface systems technical requirements for potential system enhancements. This effort will include the following:

a. US ASW/Maritime Patrol Aircraft Interfaces.

b. Non US ASW/Maritime Patrol Aircraft interfaces.

c. Acoustic and Non-acoustic Data Processing Systems and Subsystems including: Fast Time Analyzer System (FTAS), Automatic Quick Look (AQL), Acoustic Intercept System (AIS), TSC Tape Interface Control System (ATICS), and TSC High-Density Digital Recorder (HDDR), CTAPS, TAMPS, ICAPS, ASUMTDA, and ISAR.

d. Interoperable C^3 Tactical Command and Control, i.e., Tactical Data Links, Link 11, Link 16, DII, JMCIS and USMTF.

e. Overall $C^2/C^3/C^4I$.

f. Automated and Non-automated Data Interfaces with Other Shore/Sea-based Systems/Activities; using WEB technology.

g. Operator Interfaces; Quantity and Type.

h. Security.

i. Relocatability.

The contractor shall develop alternative engineering solution to these requirements taking into account technical, hardware, software, firmware, operational requirements, and constraints. As a result of research and analysis, the contractor shall rank order, with complete justification, recommended alternatives.

3.2.1.3 Impact Assessments. The contractor shall participate in the product improvement program by conducting in-depth engineering/technical investigations of proposed changes, user problems or other directed efforts which impact the TSC, TCOMM, MOCC, MAST, MICFAC, TCO, UOC, CAC2S, GCCS, JMICS Video Systems, C^3, and FMS, C^4I, and associated interface systems. These investigations shall address realistic engineering alternatives to satisfy the requested change, project implementation, and support costs, and shall recommend the best overall solution to satisfy the desired capability.

3.2.1.4 Technical Specification Development. The contractor shall review, analyze, prepare and revise SPAWAR Systems Center, Charleston specifications and technical standards. Also update hardware, software and system requirement specifications, and/or provide a review report to the government in the accordance with the following applicable CDRLs as defined by the delivery order. Additionally, develop and update technical standards for installation, maintenance, and certification of fleet communication systems.

3.2.1.5 Interoperability/Integration Studies. The contractor shall conduct Intra-DoD and Inter-Government interoperability studies as well as multi-platform integration studies of TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, JMCIS Video Systems, FMS, C^4I and associated interface systems. The results of this effort shall be reported in draft technical position papers, technical descriptions, and technical analyses.

3.2.1.6 System Design Reviews. The contractor shall provide technical comments and recommendations to C^4I Division program and project managers at Program Design Reviews, Status Reviews, management Reviews and adhoc Program Technical Meetings such as:

a. Preliminary Design Review (PDR)

b. System Requirements Review (SRR)

c. Critical Design Review (CDR)

d. Test Readiness Reviews (TRR)

e. Technical Meetings

f. Program/Project Status Review Meetings.

3.2.1.7 Data Reviews. The contractor shall review all technical, logistic, program, and other data delivered under the prime contract when development of TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, FMS, C^4I and associated interface system necessitates an equipment contractor. Evaluate equipment contract deliverables relative to the equipment contractual requirements both as to format and technical substance. Provide a report of this evaluation, including a list of deficiencies and recommendations to designated Government personnel. The contractor shall also review equipment contractor deliverables for overall program effectiveness.

3.2.1.8 Prototype Development. The contractor shall develop hardware prototypes such as boards, chassis, electronic devices. The Prototype development shall include engineering drawings or schematics.

3.2.1.9 Deliverable Products. The contractor shall develop and/or review the following supporting documents, ad defined by the TDL, SOW and CDRL Items as indicated.

	DESCRIPTION	CDRL ITEM
a.	Presentation Material	A003
b.	Technical Reports	A002
c.	Test Reports	A009
d.	Technical Specifications	A004
e.	Test Plans	A007
f.	Installation Engineering Plans	A033
g.	Program Master Plan (PMP)	A010
h.	Test and Evaluation Master Plan (TEMP)	A007
i.	Hardware Requirements Specification (HRS)	A001
j.	Technical Report, Documentation Review	A002
k.	Contractor Field Representative Report	A014

3.2.2 Design Development Engineering. The contractor shall perform the scientific, technical, and engineering functions necessary to transfer a systems operational and/or functional need into a system enhancement through design modification or new design of the systems hardware and/or software.

This includes all engineering activities relative to the design, development, fabrication, and integration of hardware and software configuration items being developed by the C^4I Division, as specified by the delivery order, with respect to new systems under development or existing systems undergoing modification. These include efforts relative to the TSC, TAV, ATOS, FTAS, ISAR, PID, ATICS, TSC Workstation, Networking Systems, CXT Fiber Optic Technology, TADIL C, TADIL J, and P-3C USUW improvement/Program (AIP) interfaces including Pre-Flight Insertion Data (PID) and Operational Program. The contractor shall also analyze emergent new technology system/equipment designs for potential application. Efforts shall include:

a. Review of requirement documents and specifications to ascertain design goals and objectives established during system concept formulation.

b. Evaluation of the system capability to meet the design goals and objectives in an operational environment.

c. Evaluation of the systems interoperability capabilities with current and future system, subsystems, equipment and software.

d. Analyzing design specifications to identify area requiring improvement.

e. Performing laboratory test on TSC, TCOMM, NIU, MOCC, MICFAC, MAST, TCO, UOC, CAS2S, GCCS, C^3, FMS, C^4I or associated interface system equipment and software.

f. Design, develop, fabricate and test hardware and/or software configuration items including coding, debugging, unit testing and integration of software patches, modules and programs.

g. Review of Prime Contractor hardware and software development efforts and documentation.

h. Providing technical and engineering expertise to the Government program/project technical representatives at design reviews, conferences, and technical meetings.

3.2.2.1 Hardware Design Development and Integration. The contractor shall provide hardware engineering and technical support in the design, development, fabrication, assembly, integration, and test and evaluation of system, hardware and components for C^4I, TSC, and related interface systems applications.

3.2.2.1.1 Deliverable Products. The contractor shall develop and/or review the following supporting documents, as defined by the TDL, SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Hardware Design Development & Integration	A001
b.	Interface Design Specification (IDS)	A035
c.	Top Level Design Document (TLDD)	A005
d.	Development Plan (DP)	A010
e.	Quality Program Plan (QPP)	A041
f.	Configuration Management Plan (CMP)	A037
g.	Technical Report, Documentation Review	A002

3.3 Task B: Software Engineering. The contractor shall analyze, design, develop, test, evaluate, verify, validate, and deliver software related to secure and non-secure tactical, non-tactical, simulation, embedded computer systems, and networks. The programming languages and operating systems that must be addressed in this effort are UNIX, Ada, C, Windows NT, VXworks and FORTRAN.

3.3.1 Software Design, Development and Integration. The contractor shall have demonstrated expertise in the following software languages: UNIX, VxWorks, Ada, C, Windows NT, FORTRAN IV, Fortran 77, Pascal, VMS, Basic and CMS-2Y, and shall provide software engineering and technical support in the design, development, integration, and test and evaluation of TSC, TCOMM, MOCC, MAST, MICFAC, TCO, UOC, CAC2S, GCCS, FMS, C^3, C^4I, and associated interface systems, subsystem, equipment, and software in accordance with MIL-STD-498 and the applicable delivery order.

3.3.1.2 IT System Analysis. Through IT system analysis define the following: the purpose, background, and intent of the system and its functional requirements; the dependencies among functions and tasks, and logical or mathematical descriptions of each function or both. Define the user's needs, including timing of development, data types and processing needs, communication requirements, report formats, level of user friendliness, response time, off-the-shelf software requirements, security requirements, and system constrains. A recommended Plan of Action and Milestones (POA&M) outlining the tasks to be accomplished shall be provided as well as plans for the system, and a detailed cost-benefit analysis of the hardware, software, personnel, leased lines, and maintenance costs. Provide technical report and installation engineering plan summarizing the research of the tasks above.

3.3.1.3 System Software Design and Maintenance. The contractor shall participate in system software design in which each system's functional and performance requirements, as it relates to specific mission oriented functional requirements, shall be defined. Develop preliminary systems design, and evaluate system capability to meet design goals and to integrate with existing or planned systems. Audit trails, transaction logging and recovery, definition of failure and error recovery requirements and capabilities, and a cost benefit analysis shall be conducted. The overall software system specifications shall include a detailed functional summary for each module, data input, screen formats for each input function, input data sources, processing requirements, outputs, interface requirements, data flow, and proposed programming languages. The system database specification shall include: organization of the database by record structure, field tables, storage requirements, and record linkages. The system program specifications shall include: a description of the functions and purposes of each module; accuracy and validity requirements, timing, flexibility, interface, and security requirements, and inputs and outputs. The contractor shall participate in the design review meetings, technical reviews, and conferences and presentations to provide system design expertise. Provide IT system specifications, technical reports, and hardware and software documentation following the standards referenced in summarizing the research. In addition, maintain software of

deployed systems by analyzing trouble reports, developing, and testing software to correct problems. Two specific tasks are identified as follows.

3.3.1.4 Software Test Services. The contractor shall perform software test services in which informal testing shall be conducted and test plans and procedures for formal testing shall be developed. Organizational responsibilities for conducting and coordinating the test including contractor, government, and other agency requirements shall be identified, and formal tests shall be conducted by individuals other than those who developed the software or system. Provide test plans/procedures and test reports summarizing the research of the tasks, as described above.

3.3.1.5 Independent Verification and Validation (IV&V). The contractor shall provide Independent Verification and Validation (IV&V) of software, software documentation, software products and prime contractor software quality assurance programs. Review, analyze, test and evaluate the results of third party contractor for IV&V activities and provide a detailed report relative to their effectiveness.

3.3.1.6 Software System Implementation Support. The contractor shall provide a detailed installation engineering plan including the accumulation of all data, and hardware/software system to implement the system. The operational status of the system shall be evaluated monthly for six months and semi-annually thereafter. Provide a curriculum and plans for formal user Training, both initial OJT and follow-on schoolhouse. Provide training documentation and a systems implementation plan in a technical report summarizing the research of the tasks above as required.

3.3.1.7 Network Planning Services. Assess network requirements and planning analysis in which the contractor will be required to perform feasibility studies to define the purpose and objectives of the proposed network, the scope of the applications systems involved, the geographical locations that will be interconnected, and the associated costs of and recommendations on the overall feasibility of the network. Provide network maps identifying the geographic scope of the network and all application systems at each location, and the required protocols, traffic volumes, and response times. Establish security control requirements and back-up procedures to protect against errors, disruptions, and breaches of security. Provide technical reports defining the purpose and objectives of the proposed network.

3.3.1.8 Software System Management. The contractor shall provide technical comments and recommendations for software system management of processing, database, file, and network system including suggestions for enhancements, report generation, data entry, and program support. Provide technical support for the evaluation, procurement, installation, and testing of all systems. Computer-aided design and engineering services as well as computer graphics generation support shall also be provided. Provide technical reports summarizing the research of the tasks above.

3.3.1.9 Network Design Services. The contractor shall furnish network design engineering services and identify alternate network configuration. Evaluate each configuration to determine the required line controls and modes of operation and develop a cost and benefit analysis. Analyze software and protocol requirements taking into consideration any current configuration constraints, the host computer, software, database management systems, other software programs in the network, and software diagnostics and maintenance parameters. Study the network hardware requirements using analysis methods such as computer simulation and modeling. Provide technical reports summarizing the research of the tasks above.

3.3.1.10 Communications Protocols. In performing software development, specify and allocate the user's requirements to interface the existing and planned host end user computer equipment with the following communications protocols:

Record Message Traffic

- AUTODIN
  - Mode 1 interfaces to MDT, NOVA, and legacy systems
  - RIXT interfaces to LDMX, PCMT, and legacy systems
  - CUDIXS (and fleet broadcast) for mobile systems
  - Asynchronous interfaces (XON/XOFF) to the above systems
  - Interfaces to backsides, including AMP (ethernet), asynchronous TTY, kermit, and direct file transfer methods (NFS, FTP, HTML)

- DMS
  - X.400 series protocols
  - X.500 series directory services
  - DoD-specific protocols for extending X.400 networks to mobile systems
  - Understand the relationship between DMS message formats and transmission media
  - Legacy system interfaces (MFI, hybrid user agents)
  - Interfaces to backside delivery systems (DMS components and legacy AMHS)

- Tactical Message Traffic
  - Broadcast networks
  - IDS-8648 network (OTCIXS, TADIXS-A, SSIXS) protocols
  - BGIXS protocols
  - HF e-mail implementation
  - HF/UHF VP Broadcast implementation
  - Point-to-point networks
  - JOTS-LAN protocols
  - TTY (JOTS and orderwire) implementations
  - HF/UHF CRATT protocols

- Network Infrastructure

- TCP/IP networks
- HDLC-based networks
- X.25-based networks
- Dialup access to networks
- Routing protocols and management (to include RIP, OSPF, MOSPF, IGRP, and BGP)
- ISDN dialup networks
- Switched-56, T-1, and other "dedicated" networks
- ATM networks
- Emerging network technologies (SONET, etc.)
- VTC Protocols (H.320)

3.3.1.11 CSCI Development Plan. Define Computer Software Configuration Item (CSCI) based in the system functional requirements. A set of software requirement specifications to be reviewed by the COR will establish a baseline for the software development process. A software development plan shall be developed for the COR review including available of non-developmental software items applicable to the system. The plan will include a description of the software testing activities and use of a software development library for the control of all sources codes and associated documentation.

3.3.1.12 CSCI Design. The contractor shall design, construct, test, and integrate the CSCI with adequate documentation to include their interfaces with hardware configurations items and other system software as defined in MIL-STD-498.

3.3.1.13 CSCI Reports. The contractor shall maintain cost and schedule forecasts, analyses, and report to at least the CSCI level. These reports shall indicate the predicted versus actual progress and include budgeted versus actual expenditures.

3.3.1.14 Communications Circuit Card. The contractor analyze the processing resources of the software-driven circuit card assembly and the host end user computer equipment to assure the proper end-to-end data transmission, link control, security, and synchronization of the communication protocol interface ports. Provide UNIX driver interface documentation and a user's manual describing the procedures and functional requirements for deploying the software driven circuit card assembly in the user's computer environment.

3.3.1.15 System Testing. The contractor shall perform overall testing of the DCCS system prior to installation at a fleet site. Included in this effort shall be assembling the system configuration representative of planned fleet installation and the external communications lines necessary to exercise the system in a realistic environment. Included in the overall test plan shall be support of Category III AUTODIN tests Testing for the system shall be performed in a phased approach according to the following categories.

a. Interim release evaluation of DCCS software prior to overall testing for familiarization and independent assessment.

b. Interim DCCS documentation shall be reviewed and analyzed for accuracy, consistency, completeness, and ease of use.

c. System requirements implementation shall be reviewed based on analysis of contractor interpretation of the DCCS functionality.

d. Contractor test monitoring shall be conducted to provide independent assessment and familiarization for final test and evaluation.

e. System integration and test of fleet representative configuration prior to overall tests shall be conducted including external communications. (OTCIXS, TADIXS A/B, TTY, CUDIXS, TACO-2, ADCCP 8/128, and AUTODIN).

f. Overall system test of the DCCS system for government acceptance, fleet utility, and certification.

g. The system test environment, allowing for expeditious and successful test Cat III certification of the DCCS system.

3.3.1.16 Deliverable Products. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Interface Requirements Specification (IRS)	A035
b.	Software Requirements Specification (SRS)	A019
c.	Interface Design Specification (IDS)	A035
d.	Software Design Description (SDD)	A026
e.	Software Development Plan (SDP)	A020
f.	Software Quality Program Plan (SQPP)	A041
g.	Software Configuration Management Plan (SCMP)	A020
i.	Data Base Design Description (DBDD)	A021
j.	Software Version Description (SVD)	A026
k.	Software User Manual (SUM)	A022

l.	Computer System Diagnostic Manual (CSDM)	A023	
m.	Requirements Analysis	A029	
n.	Presentation Material	A003	
o.	Technical Reports	A028	
p.	Technical Specifications	A009	
q.	Test Plans/Procedures	A007	
r.	Installation Engineering Plans	A033	
s.	Technical Report/Operational Status	A028	
t.	Operational Concept Description (ODC)	A025	
u.	System/Subsystem Design Description	A025	
v.	Technical Report, Software Product Specification (SPS)	A024	
w.	Software Test Report (STR)	A009	
x.	Computer Operation Manual (COM)	A023	
y.	Computer Programming Manual (CPM)	A023	
z.	Firmware Support Manual (FSM)	A027	
aa.	Software Transition Plan (STrP) or		
bb.	Engineering Change Proposal (ECP)	A006	
cc.	Engineering Change Proposal Analysis	A008	
dd.	Specification Change Notice (SCN)	A018	
ee.	Contractor Field Representative Report	A014	
ff.	Market Research and Evaluation Report	A013	

3.3.2 System Integration Support. The contractor shall perform systems hardware and software integration and testing to ensure total operational and functional compatibility with interfacing/interacting systems, subsystems, equipment, and computer programs. Efforts which may be required include:

a. Review of system and associated interface requirements specifications for potential impact.

b. Review of system hardware and software performance characteristics.

c. Development and update detailed system integration plans, procedures, design drawings, schematics, diagrams, and interface definitions.

d. Preparation of fabrication drawings.

e. Installation and check-out of system hardware and/or software.

f. Draft, review, and update of system installation and check-out procedures.

3.4 Task C: Security Engineering.

3.4.1 Scope. The contractor shall address computer security issues from initial concept development throughout the system life-cycle. The contractor shall follow guidelines set forth in the SPAWAR Computer Security Acquisition Management Guidebook (tactical systems) and NAVDAC Publications 24.1 and 24.2 (non-tactical systems) as well as security guidelines set forth by SPAWAR's JMCIS '98 initiative. The contractor shall:

3.4.1.1 Perform Computer Security Requirements Analyses. The contractor shall provide inputs to the Computer Security Accreditation Plan (CSAP). The CSAP outlines the system certification and accreditation plan in accordance with NAVDAC publications 17.12, Resort 8879 and DOD-STD-5200.28-STD and it contains an analysis of the expected operational risks. Develop a Certification Test and Evaluation (CT&E) Plan and Test Report that traces security-related requirements from the initial specifications to system and network implementation. All classes of network systems require a formal design model and systems designated B2 or higher require a separate verification plan. Develop detailed Contingency Plans that identify alternative operational plans for each system and network for which disruption of service would have a critical impact on mission accomplishment. Provide inputs to Certification and Accreditation Packages. Provide System Security Operating Procedures (SSOPs). Provide technical reports summarizing the research of the tasks stated above. Other documentation deliverables may include: CSAP, CT&E Test Plan, CT&E Test Report, Vulnerability Analysis, Security Test (ST&E) Plan, ST&E Test Report, and SSOPs. These deliverables comprise the whole of the security certification and accreditation packages for a single system/program. More than one system/program is required to be supported.

3.4.1.2 Perform Network Security Requirements Analyses. The contractor shall review the network system architecture, concept of operations, and security environment to identify system vulnerabilities. Estimate the level of trust required by the network system. Based on this estimation, identify specific security features required by the network system to achieve the estimated level of trust in accordance with DOD-STD-5200.28-STD and to offset known vulnerabilities. Test the final system security features and countermeasures against all applicable security checklists, such as the DII Security Checklist. Provide technical reports summarizing the research of the tasks above. Results of the checklist testing are to be provided in the CT&E Test Report and other documents, where applicable. Other documentation deliverables may include a Vulnerability Analysis and inputs to the CSAP.

3.4.1.3 Provide Risk Management Services. The contractor shall provide technical services to include Methods I and II Risk Assessments, Security Test and Evaluations (ST&Es), and computer security reviews for secure and non-secure, tactical and non-tactical computer systems and networks. Risk Assessments must comply with OPNAVINST 5239.1A Ch 1, or latest version. and will identify and validate threats, risks, and additional countermeasures required. Prepare technical reports summarizing the results of the above efforts. These reports shall contain the documentation specified by OPNAVINST 5239.1A Ch 1, or latest version. Final on-site operational Risk Assessments are required as part of the ST&E Report. The contractor shall use automated risk assessment tool; however, a copy of the tool shall become the property of the activity for which the service requiring use of the tool was provided.

3.4.1.4 Perform Security Test and Evaluations. The contractor shall provide technical services to support the development of ST&E Plans and Test Reports. Conduct on-site operational surveys and identify network system vulnerabilities and associated in-place countermeasure from risk assessments and site-specific documentation. Develop the ST&E Test Plan in accordance with NAVDAC Advisory 42C and each element of the computer and network environment, and identify vulnerabilities and in-place countermeasures. Develop comprehensive plan to reduce or protect against a vulnerability and develop specific pass/fail criteria for each effectiveness test. The contractor shall use automated ST&E tools. However, a copy of the tool shall become the property of the activity for which the service requiring use of the tool was provided. Documentation deliverables may include ST&E Plans and ST&E Reports for more than one site.

3.4.2. Deliverables and Schedules. The contractor shall submit technical reports (CDRL Item A004) related to Task C. The contractor shall submit shall submit required certification and accreditation documentation for each system/program related to Task C.

3.5 Task D: Test and Evaluation.

3.5.1 Scope. The contractor shall provide the necessary engineering and technical expertise to conduct a thorough test and evaluation of all operational and functional aspects of newly designed or modified systems, equipment or computer software. The contractor shall

participate in test and evaluation program by preparing or reviewing test and evaluation plans and procedures or both. Tests program support services shall include the witnessing of specified in-plant tests, reducing services, and evaluation of test data. The contractor shall conduct laboratory and field test at SPAWAR Systems Center, Charleston and SPAWAR Systems Center/NAWC-AD Patuxent River as required, at other designated government facilities, and aboard ship. This effort may require the development of installation plans, the design and fabrication of test fixtures, and installing and maintenance of the equipment during the testing process. Upon completion of test, the contractor shall remove the equipment from the test report or analysis. Other efforts which may be required include:

a. Draft, review, and update Test and Evaluation Master Plans (TEMPs).

b. Define system test and evaluation requirements.

c. Develop, review, and update program/project test plans, test specifications, and test procedures documentation.

d. Provide technical support to C^4I Division program/project engineers at T&E technical reviews, test readiness reviews (TRRs), and technical meetings.

e. Conduct system testing in accordance with approved system test procedures and provide a detailed Report of Test Results (RTR) upon completion.

3.5.2 Test Specifications, Plans, and Procedures. The contractor shall develop and/or review system/equipment inspection and acceptance test plans, procedures and specification; prepare test requirements documentation for new and/or modified TSC, TCOMM, MOCC, MAST, MICFAC, TCO, UOC, CAC2S, GCCS, DCCS, NIU, JMICS Video Systems, FMS, related C^4I systems, subsystems, equipment and software to ensure comprehensive verification or salient and inherent capabilities; review test plans, procedures and specification, to ensure compliance with necessary requirements; and review vendor supplied test plans, procedures and specifications for technical accuracy, adequacy and report findings. The following criteria shall be the minimum requirements for all technical specifications developed by the contractor. The specifications shall invoke, in whole or in part, MIL-STD-1472 D(3), MIL-STD-498, and such other standards and specification, commercial or military, that are identified by the C^4I Division as being critical to the development of the specification.

3.5.2.1 Test Plans/Procedures. The contractor shall prepare in accordance with (CDRL Item A007) the test plans/procedures for testing and evaluating the specified TSC, TCOMM, MOCC, MICFAC, MAST, TCO, DCCS Air Force Systems, UOC, CAC2S, GCCS, Video systems, FMS and C^4I and related system, subsystem, equipment and software. The test procedures shall clearly define the objectives of the test, the procedures that must be carried out by the test team to meet these objectives, and the pass/fail criteria for the test. Test procedures documentation shall include:

a. Test title

b. Test objectives

c. Unit(s) to be tested

d. Test equipment required

e. Fleet and outside services required (if any)

f. Staff power required

g. Test duration

h. Number of times each test is to be performed

i. Detailed test procedures and pass/fail criteria

j. Test data sheets

k. Modeling requirements

l. References

3.5.2.2 Technical Inputs to Test and Evaluation Plans. The contractor shall provide technical inputs to Test and Evaluations Master Plans (TEMPs) for TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, JMCIS Video systems, Air Force DCCS systems, C^3, FMS, C^4I, and associated interface systems, subsystems, equipment, and software. The contractor shall collect technical information from applicable SPAWAR codes, Operations Test and Evaluations Forces, and appropriate laboratories and field activities. The contractor shall integrate this information with comments and recommendations provided during the internal SPAWAR review cycle of the initial draft and/or revision. The contractor shall further integrate comments and recommendations resulting from the formal OPEVAL and/or CNO review and shall prepare documentation to be submitted for review.

3.5.2.3 On-line Test Support. The contractor shall provide technical support to the C^4I Division program/project engineers in performing TSC, TCOMM, MOCC, MICFAC, MAST, TCO, JMCIS Video Systems, Air Force DCCS systems, UOC, CAC2S, GCCS, FMS, C^4I and associated interface systems and equipment on-line factory, acceptance, development, and operational testing, and provide a report of test results. The contractor shall conduct an in-depth analysis of system, subsystem, equipment and software deficiencies and provide recommendation for corrective actions via NCR, SCR, PTR, IR, ECR, PR and/or FR reports.

3.5.2.4 Engineering and Technical Support. The contractor shall provide engineering and technical support to C^4I Division program/project engineers in the test and evaluation of TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, JMCIS Video Systems, Air Force DCCS Projects, FMS and C^4I, and associated interface systems, subsystems, equipment or software following approved test plans and procedures. Specifically, the contractor shall:

a. Install the system, equipment or software at the C^4I Division Laboratory or at other TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects, JMICS Video Systems, FMS and C^4I sites throughout the world, as specified by the TDL for the purpose of conducting Test and Evaluation.

b. Conduct test in accordance with the applicable approved Test Plan and Procedures.

c. Design and fabricate test aids as necessary for use in testing and evaluation the specified system, or equipment.

3.5.2.5 Test Bed Design And Development Services. The contractor shall provide support to the TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects, JMCIS Video Systems, FMS and C^4I systems that require advance development model and system, laboratory test efforts to evaluate alternate design considerations or to provide data upon which to base a decision. The emphasis will be on providing a test facility to evaluate system/subsystem performance as well as conduct of overall system, integration testing of proposed development models. The contractor shall prepare and maintain (update) test bed and implementation plans that shall include task definition and schedules for design, developments, fabrication, equipment installation, and test efforts associated with the test bed. The contractor shall provide services to support the C^4I Division in preparing the following:

a. Lists of equipment and material with associated space and weight characteristics representing.

b. Facility requirements definition documents.

c. Installation drawings.

d. General test plans.

3.5.2.6 Test Reports. The contractor shall prepare detailed test reports, documenting the test and evaluation activities conducted to verify the military utility, safety, effectiveness, and suitability (including compatibility, interoperability, reliability, maintainability, and ILS requirements) for specified systems, equipment and/or software. These reports shall

include all data collected during the performance of T&E efforts relative to the measurement and analysis of system and/or equipment design compliance with government specification for technical and operational performance. Test reports shall be prepared in sufficient depth to permit technical risk assessment, determination of program progress, early identification of technological and engineering deficiencies, and (where applicable) to support the certification of system/equipment readiness for operation evaluation or direct fleet introduction.

3.5.2.7 Deliverable Products. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Technical Report	A004
b.	Test Plan/Procedures	A007
c.	Test Specification	A007
d.	C^4I Change Request (C^4ICR)	A031
g.	Software Change Request (SCR)	A031
h.	Program Trouble Report (PTR)	A016
i.	Equipment Change Request (ECR)	A031
j.	Technical Report, Impact Assessment	A004
k.	Technical Report, Software Review	A030

3.6 Task E: Installation, Maintenance and Site Support.

3.6.1. Scope. The C^4I Division, Code 61, maintains a permanent TSC, C^4I laboratory test bed utilized for both hardware and software test and evaluation, new technology analyses, and the evaluation of integration efforts. The contractor shall support the C^4I Division in the integration of equipment and components into completely tested and validated TSC, TCOMM, MOCC, MAST, MICFAC, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects, JMICS Video Systems, FMS and C^4I systems in accordance with the system integration and test plan CDRL Item A007. The contractor shall prepare system integration and test plans for government approval. Plans shall document all requirements for integration and test facilities, support systems, instrumentation and logistic support. The contractor shall provide technical and engineering services to install equipment;

conduct integration testing; resolve interface problems; analyze other technical problems discovered during testing; correct deficiencies in hardware, software and documentation; and ensure the continuous updating of configuration baseline. In addition, the contractor shall:

3.6.2 Installation Support. The contractor shall provide hardware and software installation and integration support to the C^4I Division TSC, TCOMM, MOCC, MICFAC, MAST, TCO, Air Force DCCS Projects, UOC, CAC2S, GCCS, JMICS Video System, FMS, C^4I mobile and fixed sites and associated interface system, subsystem and equipment programs. The contractor shall develop installation and integration plans, drawings, and procedures in accordance with DI-MGMT-80033 and DI-QCIC-80154, and shall conduct installation and integration testing in accordance with Government approved plans and procedures.

3.6.2.1 Installation Planning. The contractor shall provide TSC, TCOMM, MOCC, MICFAC, MAST, TCO, C^4I, and associated interface system, installation planning support the SPAWAR Systems Center C^4I Division Laboratory, FCTCLANT, TSC, TCOMM, MOCC, MICFAC, TCO, UOC, GCCS, CAC2S, FMS and C^4ISR mobile and fixed sites located throughout the world. The contractor shall review/develop applicable facility and equipment drawings and specification, perform site surveys, and develop installation plans, specification and procedures.

3.6.2.2 Technical/Operational Transition Support. The contractor shall provide transition support for TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, JMCIS Video Systems, Air Force DCCS Projects, C^3, FMS and C^4ISR mobile and fixed sites, or related systems, subsystems, and equipment. This support shall include the development and/or review of operational plans and procedures, development of contingency plans and procedures, technical conversion of software and hardware, and development of unique interface requirements. The contractor shall ensure that system requirements are operationally, functionally and physically consistent with the systems, equipment, software and facilities with which it interfaces. The contractor shall review all inter and intra-data transfers relating to Tactical and GENSER communications (e.g., Link 11, OTH-Gold, AUTODIN, and Broadcasts as well as Tactical Orderwire Circuits as applicable) to ensure total system compatibility and the systems ability *to* accurately send and/or receive data.

3.6.2.3 Installation Technical Support. The contractor shall provide engineering and technical support services associated with the maintenance, fabrication, installation, and integration of TSC, C^4I and associated interface systems, subsystems, equipment and software.

3.6.2.3.1 Site Installation. The contractor shall provide engineering and technical support to C^4I Division program/project engineers in performing system installation and checkout at the SPAWAR Systems Center C^4I Division Laboratory, and TSC, TCOMM, MOCC, MICFAC, MAST, TCO, GCCS, UOC, CAC2S, JMCIS Video systems, Air Force DCCS

projects, FMS and C^4ISR mobile and fixed sites located throughout the world. These efforts shall include:

a. Conduct of site surveys.

b. Development/review of site installation plans and schedules.

c. Review/development of site Base Electronic System Engineering Plans (BESEP).

d. Performing system installation and check-outs.

e. Preparing report of site installation results.

3.6.2.3.2 Maintenance. The contractor shall provide the personnel resources, equipment, and materials necessary to maintain and repair TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects, JMCIS Video Systems, NIU, FMS and C^4I and associated interface systems, subsystems, equipment and software during system/equipment/software installation at the SPAWAR Systems Center C^4I Laboratory and at more than 13 TSC, 10 MOCC and C^4I site throughout the world, as directed by the applicable TDL.

3.6.2.3.3 Integration and Installation Support. The contractor shall provide engineering and technical support in the installation and integration, test, and evaluation, and check-out of TSC, TCOMM, MOCC, MICFAC, MAST, TCO, GCCS, UOC, CAC2S, Air Force DCCS Projects, Video Systems, FMS and C^4I and associated interface systems hardware, software, subsystems, and/or related systems and equipment at the C^4I Laboratory, FCTCLANT, and Fleet sites as directed by the TDL. This support shall include:

a. Development and review of site installation plans & procedures, schedules and specifications.

b. Develop and review Site Base Electronic Systems Engineering Plans (BESEP).

c. Equipment testing, packing/unpacking, movement and emplacement.

d. Design, fabrication, installation, and testing of interface intercommunication, e.g., cable construction, etc.

e. Provide materials in support of this effort when tasked in writing by COR under emergency conditions.

f. Design and construct , test and install unique cable harnesses.

g. Install, check-out and conduct acceptance testing of various systems, software and/or related components at fleet sites.

3.6.2.4 Technical Change Notices. The contractor shall design engineering changes and provide TSC, C^4I, and associated interface systems Field Change Bulletins (FCBs), Document Change Notices (DCNs), Technical Change Notices (TCNs), Base Electronic System Engineering Plan (BESEPS), System Operational Verification Tests (SOVT) and prototype field change kits. Upon tasking by the COR, the contractor shall develop and/or review Engineering Change Proposals (ECPs). These efforts will encompass all TSC, C^4I and associated interface systems, present and future. Equipment addressed by this contract shall include:

a. C3 Modernization Evolutionary Systems

b. Fast Time Analyzer System (FTAS)

c. Tactical Support Center Communication Systems (TSCCOMMS)

d. TSC Aircraft Tape Operating System (ATOS)

e. Automatic Power Control System (APCS)

f. Short Targeting Terminal (STT) or its upgrade

g. Ocean Surveillance Information System Baseline Upgrade (OBU)

h. Mobile Ashore Support Terminal (MAST)

i. Mobile Integrated Command Facility (MICFAC)

j. Mobile-Miniature Operations Control Center (MOCC)

k. Secure Closed Circuit Television (SCCTV)

l. Integrated Video System (IVS)

m. Tactical Combat Operations (TCO)

n. Global Command and Control System (GCCS)

o. Unit Operational Command (UOC)

p. Common Air Command and Control Systems (CAC2S)

3.6.2.4.1 Field Changes Kits. The contractor shall build prototype field change kits and production field change kits to enhance performance or correct deficiencies for TSC, MOCC, MICFAC, TCO, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects,

JMICS Video systems, NIU, C^3, FMS, C^4I and associated systems as specified by the TDL. The contractor shall provide all material required for the fabrication and assembly of both prototype and production field change kits upon written approval by the COR. The contractor shall submit FCOs, DCNs and ECPs in accordance with the CDRL items identified in para 3.9.2.1. The reports shall be delivered as specified by the TDL after COR and Contracting Officer approval with appropriate allowance made by the Government for larger or more extensive efforts.

3.6.2.4.2 Site Support. The contractor shall provide engineering and technical support in performing system installation and checkout testing at SPAWAR Systems Center C^4I Division laboratory, FCTCLANT, TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, NIU, Air Force DCCS Projects, JMCIS Video Systems and FMS sites located throughout the world, as directed by the COR. These efforts shall include the performance of system installation, check-out and acceptance testing and reporting of site installation and acceptance test results.

3.6.2.4.3 Site Support Liaison. The contractor shall maintain 1-800 help desk for the support of C^4I Division. The help desk shall be manned from 7:00 a. m. - 5:00 p.m. during normal workdays. In addition, the contractor will use an answering machine for support after normal working hours and check the system daily. The contractor shall respond to all site calls in a timely manner, and they must maintain a log of all telephone conversations. The log will contain the time of call, site name, point of contact, a description of problems and recommended actions. All information must be entered into software database via WEB/SIPRNET.

Contractor personnel providing site liaison shall have a working knowledge of specific equipment within the TAC/Mobile systems, and shall make every effort to solve problems over the phone, either by suggesting a repair actions, or by talking the site personnel through test procedures found in vendor publications. If the problem cannot be solved the matter will be brought to the attention of the C^4I Logistics Group for technical assistance or training assistant.

3.6.2.4.4 Site Support Maintenance. The contractor shall provide the personnel, resources, equipment, and material necessary to maintain and repair TAC/Mobile for C^3, and C^4I or related hardware and software systems, subsystems and equipment during installation and at SPAWAR Systems Center Charleston laboratories and at more than 30 TAC/Mobile sites throughout the world.

3.6.2.4.5 Deliverable Products. The contractor shall submit FCBs, DCNs TN, and ECPs in accordance with the following CDRL Items:

	DESCRIPTION	**CDRL ITEM**
a.	Trip/Technical Report	A012

b.	System Integration and Test Plan	A010
c.	Base Electronic System Engineering Plan (BESEP)	A036
d.	Field Change Orders (FCO)	A031
e.	Design Change Notice (DCN)	A018
f.	Engineering Change Proposal (ECP)	A006
g.	Technical Change Notice (TCN)	A018
h.	Installation Specification	A034

The reports shall be delivered as specified by the Technical Direction Letter (TDL) after COR and Contracting Officer approval with appropriate allowance made by the Government for larger or more extensive efforts.

3.7 Task F: Configuration Management Support

3.7.1 Scope. The contractor shall provide configuration management (CM) support to C^4I Division TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, NIU, Air Force DCCS systems, JMCIS video systems, C^4I, FMS and associated interface systems programs. This support shall include all activities related to CM planning, baseline management, configuration identification, configuration audits, formal qualification review (FQRs), engineering changes, and configuration management records and reports.

3.7.2 CM Planning. The contractor shall provide TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, JMCIS video systems, Air Force DCCS systems and variants, FMS, C^4I and associated interface system configuration management planning support to the SPAWAR Systems Center C^4I Division TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS systems, NIU, FMS and C^4I programs and projects. The contractor shall review/develop applicable CM planning documentation and configuration management data.

3.7.3 CM Program. The contractor shall provide CM program engineering, technical and analytical support to C^4I Division programs and projects in accordance with a government approved Configuration Management Plan which includes an organization structure with configuration control methods, configuration audits and configuration status accounting procedures for hardware and software. Efforts shall also include the review and evaluation of development/prime contractor configuration management programs and providing recommendation/comments to C^4I Division CM managers.

3.7.4 Baseline Management. The contractor shall monitor and maintain accurate record s reflecting the current Configuration baselines of the TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, GCCS, CAC2S, Air Force DCCS projects, JMCIS Video Systems, FMS, C^3 and C^4I and associated interface systems, subsystems, equipment, and software under- going development, enhancement, test and evaluation, and life cycle management and shall include the Functional, and life cycle management and shall include the functional, allocated, development, and product baselines.

3.7.5 Configuration Identification. The contractor shall develop, review, update and maintain configuration identification records for all C^4I Division TSC, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS systems, JMCIS video systems, FMS, C^4I and associated interface systems, equipment and software which include listing of unique hardware and software configuration items (CIs).

3.7.6 Configuration Accounting. The contractor shall ensure that the functional and physical characteristic of reach TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS projects, JMCIS video systems, FMS, C^4I or associated interface system configuration items (CIs) match the characteristic specified by the applicable configuration identification.

3.7.7 Configuration Audits and Review. The contractor shall provide engineering, technical and analytical support to C^4I Division CM and project engineers in performance/conduct of program/project configuration audits and review.

3.7.8 Engineering Changes. The contractor shall evaluate all Engineering Change Proposals (ECPs) for potential system and/or equipment CM impact. Upon approval of an ECP, the contractor shall incorporate engineering change data into the system configuration management data records.

3.7.9 Configuration Management Records and Reports. The contractor shall establish update, maintain, and review C^4I Division CM records and generate the required CM reports.

3.7.9.1 Configuration Status Records. The contractor shall maintain configuration status records (which will include tracking of FCBs, TNs, DCNs, CKs, and 2Ks) for all TSC, TCOMM, MOCC, MICFAC, TCO, UOC, CAC2S, GCCS, MAST, Air Force DCCS systems, JMCIS Video Systems, FMS and C^4I sites. The records shall be made available for periodic reviews by the Government on an "As Required" basis. The contractor shall maintain the CDMD/OA Database. CDMD-OA incorporates the latest technological innovations to maintain data integrity and speed transmission of updates between the ships, sites and the CDMs including INMARSAT satellite transmissions, high speed Internet connections, UNIX and Windows NT servers.

3.7.9.2 Master Site Inventory. The contractor shall develop, update and maintain site inventory listing and shortage items lists for each site. The master site inventory listings shall identify

shall items to be provided and reflect an accurate indication of all items actually received by the site. The contractor shall maintain via WEB/SPIRNET.

3.7.10 Deliverable Product. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated:

	DESCRIPTION	**CDRL ITEM**
a.	Configuration Status Records/Reports	A038
b.	Technical Report, Audit	A002
c.	Configuration Management Plan (CMP)	A037
d.	Technical Report, Document Review	A002
e.	Technical Report, Formal Qualification Review (FQR)	A002
f.	Master Site Inventory List	A039
g.	Site Shortage Item Report	A032

3.8 Task G: Quality Assurance (QA) Support.

3.8.1 Scope. The contractor shall provide engineering technical and analytic support to the to the Contracting officer's Representative (COR). This support shall include quality assurance planning, verification and validation, and acceptance testing. The contractor shall submit a quality program plan (QPP) which shall be specific with respect to work required in the statement of work, but may include generic contractor procedures.

3.8.2 Quality Assurance Planning. The contractor shall provide TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS Project, JMICS Video System, FMS, C^4I and associated interface systems quality assurance planning support to the SPAWAR Systems Center C^4I Division TSC and C^4I program and projects. The contractor shall review/develop applicable QA planning documentation and data including development/prime contractor QA plan, procedures, and associated documentation.

3.8.3 Procedures. The contractor shall provide all procedures used to fabricate, assemble, modify, install, and test products must be documented and kept current. These written work instructions will be made available to the employees required to perform the specific task.

3.8.4 Inspection System. The contractor shall establish and maintain a quality assurance inspection system to ensure adequate control of material, workmanship, and testing procedures. Systems, subsystems, equipment and software shall be subject to in-process reviews, approval and test by the Government to determine operability, maintainability, reliability, and conformance with all applicable requirements and specifications, including:

a. Preliminary Design Reviews (PDRs)

b. Critical Design Reviews (CDRs)

c. Product Approval Reviews

d. Factory Acceptance Tests (FATs)

e. Acceptance Tests

3.8.5 Acceptance Testing. The contractor shall provide system, subsystem, equipment and software acceptance testing support, including the development, review, and evaluation of acceptance test plans and procedures, technical specifications, and Requirements Documentation. The contractor shall participate as a member of the government's acceptance tests team and when specified in the delivery order, shall provide test personnel for conduct of acceptance testing.

3.8.6 Software Quality Assurance. The contractor shall provide software quality assurance support to the C^4I Division Quality Assurance Manager in accordance with contractor best practice and shall provide software quality assurance monitoring, testing, review, and documentation. The contractor shall critically review all software design documentation and products against MIL-STD-498 and the following criteria:

a. Contractual Requirements.

b. Interface Requirements.

c. Overall System Operational Effectiveness, and/or

d. Applicable Specifications and Standards.

3.8.6.1 Independent Verification and Validation. The contractor shall provide independent verification and validation (IV&V) of software, software documentation, software products, and prime contractor software quality assurance programs. The contractor shall independently review and analyze the results of third party contractor IV&V activities and provide a detailed report relative to their effectiveness.

3.8.7 Deliverable Product. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	CDRL ITEM
a.	Quality Program Plan (QPP)	A041
b.	Technical Report, Review	A002
c.	Technical Report, IV&V	A002
d.	Acceptance Test Plan	A040
e.	Acceptance Test Report	A009

3.9 Task H: Logistic Support.

3.9.1 Scope. The contractor shall provide engineering, technical, and analytical support to C^4I Division TSC, TCOMM, MOCC, MAST MICFAC, TCO, UOC, CAC2S, GCCS, FMS, Air Force DCCS projects, JMICS Video Systems, C^4I and associated interface systems logistic support efforts. This support shall include the analysis, development, review, maintenance, and tracking of system and equipment logistics support planning, maintenance, and training data and documentation.

3.9.2 Logistics Planning Support. The contractor shall provide engineering, technical and analytical support all Integrated Logistic Support (ILS) elements and disciplines, specifically the following:

a. Computer Resources Support

b. Configuration Management

c. Design Interfaces

d. Facilities

e. ILS Planning

f. Maintenance

g. Manpower and Personnel

h. Packaging, Handling, Storage, and Transportation

i. Quality Assurance

j. Reliability and Maintenance

k. Safety

l. Support Equipment

m. Supply support

n. Technical Data

o. Training and training Support

3.9.2.1 Deliverable Product. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Validation Completion Report	A052
b.	Integration Logistic Support Plan	A049
c.	Supportability Assessment Plan	A053
d.	Logistic Support Analysis Plan	A049

3.9.3 Provision Support. The contractor shall develop, review, update, and maintain Provisioning Technical Documentation (PTD) packages resulting from hardware procurement, Design Change Notices (DCN), field changes or from related fleet activities, PTD and updates will be prepared for the purpose of obtaining Material Support Dates (MSD) for new items provisioned and in the case of updates, revision of existing Allowance Parts Lists (APL).

3.9.3.1 Logistic System Support Data. The contractor shall collect, compile and provide system support technical data in accordance with MIL-HDBK-1388-1A and/or which shall be used to update and enhance logistics procedures involving facilities maintenance, communications and space utilization.

3.9.3.2 Provisioning Technical Documentation Updates. The contractor shall develop, update, and maintain complete provisioning technical documentation (PTD) packages in accordance with applicable standards and/or instructions as well as update/maintain existing PTD packages due to design change notices (DCNs) or field change bulletins

(FCBs) in accordance with, MIL-STD-1561B, or ICAPS 87-01-UG as applicable. PTD and PTD updates will be prepared for submission to NAVICP Mechanicsburg, PA for the purpose of updating previously issued APLs for continued support of C^4I, TSC, TCOMM, MOCC, MICFAC, TCO, UOC, CAC2S, GCCS, MAST, JMCIS Video Systems, Air Force DCCS project, FMS and associated interface systems.

3.9.3.3 Deliverable Product. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Supplementary Provisioning Technical Documentation (PTD)	A051
b.	Provisioning Performance Schedule (PPS)	A050
c.	Logistic System Analysis Record (LSAR) Data	A049
d.	Technical Report, Technical Provisioning Documentation (TPD)	A046

3.9.4 Logistic Maintenance Support. The contractor shall develop, review, and update TSC, TCOMM, MOCC, MICFAC, TCO, MAST, DCCS Air Force Projects, JMICS Video Systems, FMS, C^4I, and associated interface systems, subsystems, and equipment maintenance support documentation in accordance with applicable instructions, CDRLs, this SOW, and the TDL. The contractor shall review design change notices (DCNs), field change bulletins (FCBs), and fleet inputs for potential impact on system/equipment operation and maintenance (O&M) manuals, maintenance requirement cards (MRCs), and maintenance instructions and SOVT.

3.9.4.1 Logistic Analysis Support. The contractor shall review and submit recommended modifications to the initial provisioning baseline and spares levels based on analysis of usage data received from operating forces, and from recommendations received from the systems effectiveness function. Data analyzed includes:

a. CASREPS.

b. Maintenance Data Collection System (MDCS).

c. Mean Time Between Failure (MTBF) variances.

d. Field Service Reports

e. Equipment Repair Data

3.9.4.2 Technical Manual Development. The contractor shall develop, review, and/or prepare updates to technical and Users manuals in accordance with applicable CDRLs.

3.9.4.2.1 Deliverable Product. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Technical Manual, Operation and Maintenance	A042
b.	Manual, Technical, Summary Report	A042
c.	Tables, Technical Update Revision	A042
d.	Manual, Technical Update Revisions, Red Lined Manuals	A042
e.	Manual, Technical Update Development/Revision	A042
f.	Technical Manual, Review Report	A042
g.	Troubleshooter's Guide/Update	A043
h.	Validation and Verification Report	A052

3.9.4.3 Operation and Maintenance (O&M) Manuals. The contractor shall develop, review, and update TSC , TCOMM, MOCC, MICFAC, TCO, MAST, UOC, CAC2S, GCCS, Air Force DCCS Projects, JMCIS Video Systems, FMS and C^4I operator and maintenance (O&M) Manuals. Manuals shall be reviewed for accuracy, clarity, completeness of technical content, and usability.

3.9.4.3.1 Deliverable Product. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Operation and Maintenance (O&M) Manual	A044
b.	Technical Report, Document Review	A029
c.	Validation and Verification Report	A052

3.9.4.4 Maintenance Requirement Cards (MRCs). The contractor shall develop, review, update, and maintain TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, JMICS Video Systems, Air Force DCCS Projects and C^4I Maintenance Requirement Cards (MRCs) due to design change notices (DCNs), field change bulletins (FCBs), and/or inputs from fleet activities for TSC, C^4I SR, FMS and associated interface systems, subsystems, and equipment

The MRC development submissions are estimated at (5) per year and the MRC updates will number approximately 15-20 per year.

3.9.4.4.1 Deliverable Product. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Maintenance Requirement Cards	A045
b.	Maintenance Requirement Card Schedule	A058
c.	Technical Report, Document Review	A012

3.9.5 Reliability and Maintainability. The contractor shall provide engineering, technical, and analytical support to C^4I Division Reliability, Maintainability, and Availability (RMA) Programs in accordance with Government approved RMA Procedures in this SOW, and applicable CDRLs.

3.9.5.1 Reliability. The contractor shall perform a reliability prediction and/or review/analyze prime contractor reliability prediction data. Prediction shall be calculated using the parts count methods of MIL-HDBK-217E, as defined by the applicable TDL. The contractor shall submit a Reliability Prediction Report or Reliability Prediction Data Analysis Report as applicable.

3.9.5.2 Maintainability. The contractor shall develop and/or conduct a maintainability program for TSC, TCOMM, MOCC, MICFAC, TCO, MAST, UOC, CAC2S, GCCS, JMICS Video Systems, Air Force DCCS Projects, FMS, C^4I, and/or associated interface systems, subsystems, and equipment in accordance with MIL-HDBK-470B, this SOW and applicable CDRLs as included in the delivery order.

3.9.5.2.1 Maintainability Predictions. The contractor shall develop, review and/or evaluate maintainability predictions in accordance with MIL-HDBK-472 Not 1. The contractor shall document and justify all assumptions and the applicability of all data used in development of each prediction. The predictions shall include all mechanical, electro-mechanical and electronic parts, and shall be based on the replacement of modules, chassis-mounted components and parts at the organizational maintenance level (0-Level).

The results of these predictions shall be compared to the Systems/equipment's required MCT (Mean Corrective Maintenance Time). The contractor shall ensure that prediction MCT values do not exceed the requirements as defined in the TSC, C^4I or associated interface system specification. The contractor shall recommend such changes in design as necessary to improve the predicted values sufficiently to meet the requirements.

3.9.5.2.2 Maintainability Analysis. The contractor shall conduct an in-depth analysis of TSC, TCOMM, MOCC, MICFAC, MAST, TOC, UOC, CAC2S, GCCS, JMICS Video Systems, Air Force DCCS Projects, C^4I and/or associated interface systems, subsystems, and equipment maintainability data. The maintainability analysis shall be performed concurrently with Prime Contractor designed efforts for incorporation of the quantitative and qualitative maintainability requirements into the equipment design. The maintainability analysis shall evaluate system and equipment design changes along with the possible catastrophic and critical mode of equipment failure. The maintainability analysis shall include:

a. A study of the indication/indicator of failure at the operation level and at the various of maintenance.

b. A determination of required special tools and test equipment (including special alignment jigs and fixtures) required during equipment maintenance.

c. A review of potential design, maintenance or production problems.

d. Identification of principal items inhibiting maintainability achievements and proposed solutions.

e. Identification of corrective and preventive maintenance features.

The contractor shall analyze the information obtained during the maintainability demonstration. This analysis shall include an evaluation of built-in test equipment (BITE), accessibility to plug-in modules and hand-wired components, effectiveness of fault indicators, and determination of whether the equipment has met the specified acceptance criteria. The contractor shall recommend correction to the applicable TSC, TCOMM, MOCC, MAST, MICFAC, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects, JMICS Video Projects, FMS, C^4I or associated interface system technical manuals and determine the statistical distribution of repair items.

The contractor shall develop and/or review operational availability (AO) estimates and conduct AO analyses as prescribed in AVMATINST 3000.2. The contractor shall assess the achievement of the AO requirement contained in the applicable specification. The contractor shall recommend actions and alternatives to exceed AO thresholds.

3.9.5.2.3 Maintainability Demonstration. The contractor shall provide engineering and technical support to C^4I Division Program/Project Managers in conduct of systems,

subsystems and equipment Maintainability Demonstrations. The contractor shall provide a Maintainability Demonstration Report.

3.9.5.3 Deliverable Product. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Reliability Prediction Report	A047
b.	Reliability Prediction Data Analysis Report	A047
c.	Maintainability Prediction Report	A048
d.	Maintainability Analysis Report	A048
e.	Maintainability Demonstration Report	A048

3.10 Task I: MATERIAL CONTROL

3.10.1 Scope. The contractor shall provide the necessary resources to operate the logistics material storage at government warehouse facility located on NAWAC-AD, Patuxent River, MD and SPAWAR Systems Center Charleston, Naval Weapon Station, Hanahan, SC. The contractor shall provide support for material shipping and receiving, inventory control, plant account monitoring, ordering and stocking of equipment and parts used to support the C^4I Division. Material control support shall be performed in accordance with the government, SPAWAR Systems Center C^4I Division procedures. The contractor shall monitor and report on implementation of the Naval Supply Systems functions such as:

a. Inventory Control System

b. Designated Inventory Control Points (ICPs)

c. Supply Point Location

3.10.2 Inventory Status. The contractor shall develop and maintain an inventory control system for assigned systems, equipment's, spares ECP kits, and miscellaneous parts. This system shall include provisions for receipt, storage, issue, and/or shipment of these items. Government facilities may be utilized for these tasks.

3.10.3 Inventory Procedures. The contractor shall devise and implement procedures for a continuous on-going computer input-output analysis of parts, spares and supplies to effect optimum overall reporting of supply support. This will include:

a. Data analysis to reflect, signal and project elements of impending problem areas.

b. Recommending immediate action to preclude delinquent supply items.

3.10.4 Inventory Maintenance. The contractor shall review the following lists to ensure they accurately reflect Fleet Maintenance Support Requirements.

a. Coordinated Ships Allowance Lists (COSALs)

b. Allowance Parts List (APLs)

c. Allowance Equipage Lists

d. Provisioning Parts Lists (PPLs)

e. Tools and Test Equipment Lists (TTELs)

3.10.5 Logistics Miscellaneous. The contractor shall review APL and Technical Manual parts lists to validate repair echelon capabilities. The task functions are:

a. Evaluate APLs and initiate change requests to maintain its effectiveness.

b. Review, evaluate and report on the range and depth of technical overrides For designated equipments.

c. Maintain Government's inventory control database.

d. Input requisitions into Management Information System (MIS) and maintain.

e. Maintain C^4I Plan/Minor property database.

3.11 Task J: Training Support.

3.11.1 Scope. The contractor shall provide engineering, technical, analytical, and instructional support to C^4I Division TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS, FMS, and C^4I program/project training effort. This support shall include the planning, analysis, coordination, development, review and maintaining of TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects, FMS and C^4I and associated interface system training programs, plan, requirement and documentation via software (HTML) and hard copy as specified by the delivery order, this SOW and applicable CDRLs.

3.11.2 Planning. The contractor shall provide engineering, technical and analytical support to C^4I Division training planning efforts, including support at Training Planning Meetings and evaluation of Prime Contractor Training Plans and associated planning documentation.

3.11.3 Training Requirements Analysis. The contractor shall analyze system, equipment and computer software specifications and associated documentation to identify the specific training requirements for new or modified equipment and/or software and provide a detailed report of finding to cognizant C^4I Division Program/Project Managers.

3.11.4 Training Proposal. The contractor shall propose a training program, in accordance with MIL-STD-1379D (format 130, 131) and MIL-HDBK-292/2, (Parts 1&2 for content), and NAVADTRA 38004 (for format), which is to be presented at Government designated facilities.

3.11.4.1 Training Proposal Evaluation. The contractor shall review Prime Contractor Training Proposals and provide comments/recommendations to C^4I Division program/project managers.

3.11.5 Training Conference. The contractor shall provide engineering and technical support to the C^4I Division at Training Conferences. Support shall include review and evaluation of Prime Contractors proposed training program, data and documentation and provide comments/ recommendations.

3.11.6 Training Coordination. The contractor shall interface with the Fleet Combat Training Center Atlantic (FCTCLANT) and such other activities to ensure that adequate training support is provided throughout the life cycle of the TSC, TCOMM, MOCC, C^4I, FMS and/or associated interface systems.

3.11.7 Training Material and Services. The contractor shall develop, review or update TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects, JMCIS Video Systems, FMS and/or C^4I job-skills training course for the following types of NAVY students, as specified by the TDL:

a.	Electronic Technician (ET)	(Maintenance)
b.	Aviation Warfare Systems Operator (AW)	(Operator)
c.	Data System Technician	(Maintenance)
d.	Operation Specialists (OS)	(Operator)
e.	Watch Officer	(Operator)
f.	Data Processors (DP)	(Operator)
g.	Radioman (RM)	(Operator)

These courses shall be suitable for presentation at a Government designated facility and for use by the Government to conduct any required follow-on training throughout the life cycle of the system/equipment.

3.11.7.4 On-Site Training. The contractor shall develop a technical maintenance training program in accordance with the delivery order, including a training course outline/syllabus. The contractor shall provide approved on-site maintenance training for a maximum of 25 staff personnel on site immediately after installation of new and/or modified systems, equipment or software. The contractor shall develop the training to concentrate on the most crucial, recurring maintenance and/or operator problems and to provide trouble-shooting algorithms for correction or repair.

3.11.7.5 Formal Follow-On Training. The contractor shall develop a training course intended for use in formal follow-on training and suitable for presentation at a Government designate facility. The curricula shall be developed in accordance with MIL-STD-1379D.

3.11.7.6 Operator/Organizational Level (O-Level) Maintenance Training. The contractor shall develop Operator and Organization Maintenance (O-Level) Courses. These courses shall, at a minimum, cover theory of operation, job skills of preventive maintenance, equipment/system operation, shutdown safety and emergency procedures, equipment checkout, and alignment procedures. The O-Level Maintenance shall be developed to provide O-Level maintenance personnel with the necessary information, skill development, and practical application required for inspection, maintenance, lubrication, assembly, disassembly, adjustment, troubleshooting, failure analysis, use of tools and equipment, parts replacement, and repair in accordance with the equipment/system maintenance concept. At least 60% of the developed course shall provide hands-on work experience with the equipment/system.

3.11.8 Instructor Advisory Service. The contractor shall provide an on-site liaison to FCTC Land to assist in preparation and conduct follow-on Government training. Contractor personnel shall be qualified in TAC/Mobile and or C^4I instructions.

3.11.9 On-Site On-The-Job Training. The contractor shall provide on-site, and/or on-the-job training to personnel in the operations and maintenance of currently installed TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS Project, Visual Systems, FMS and C^4I systems and equipment as well as for newly installed equipment or systems which become operationally ready during the period of the contract. The contractor shall develop course material for new hardware as well as update existing training material for both operator and maintenance personnel. The course material will include job data worksheet, outline, instructor and student guides, tests and visual aids (IAW current CNET standards). Such training shall be on an "As Required" basis to accomplish on-site equipment familiarization for new personnel. It is estimate that training may be required at approximately thirty (30) TAC/Mobile sites as well as FCTCLANT and SPAWAR Systems Center and various other programs. The contractor will attend In-Progress Reviews (IPRs) and training Conferences and required. The

contractor shall also provide on-site operator training associated with new operational software delivered to TSC, TCOMM, MOCC, MICFAC, MAST, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects, Video Systems, FMS and C^4I sites as required.

3.11.10 Training Equipment. The contractor shall develop training equipment designs/ configuration and support equipment, and procure of fabricate training equipment.

3.11.11 Deliverable Product. The contractor shall develop and/or review the following supporting documents, as defined by the delivery order, this SOW and CDRL Items as indicated.

	DESCRIPTION	**CDRL ITEM**
a.	Trip Report	A012
b.	Job Data Worksheets	A054
c.	Training Course/ Curriculum Outline	A055
d.	Instructor Guides	A056
e.	Student Guides	A057
f.	Tests for Measurement of Student	A058
g.	Audio-Visual Aids	A059
h.	Technical Manual	A044
i.	Training Class Audit Report	A060

3.12 Task K: Program Management Support.

3.12.1 Scope. The contractor shall establish a program office to identify and coordinate all items of work, and assure that all efforts are directed toward a common goal. This program support effort shall be headed by a Program Manager who shall bear overall responsibility for the successful execution of all work to be performed under this contract. The progress of this effort shall be documented by contractor provided progress and status reports, briefing materials and milestone reports as directed by the COR. The contractor shall:

3.12.2 The contractor shall develop an annual Contract requirements implementation plan for the COR's approval. This task implementation plan shall contain the anticipated level of effort as well as the labor categories for each task. This approved task implementation plan shall form the basis for communications between the COR and the Contractor Program Manager.

3.12.3 The contractor shall develop Monthly Progress Reports which shall include the following: Cover sheet; number of hours, by labor category, charged to each task; cost of materials expended by task; and travel and per diem charged under each task. Fund expenditures shall be broken down by category of funds.

3.12.4 The contractor shall monitor TSC, TCOMM, MOCC, MAST, MICFAC, TCO, UOC, CAC2S, GCCS, Air Force DCCS Projects, JMICS Video Systems, FMS, other C^4ISR mobile and fixed sites, and associated interface system program/project status during the following activities: through review of vendor reports; periodic meetings with vendor and Government points of contact; participation in program/ project conferences; status reviews; and meetings. Provide constant input to the Government regarding the status of all areas of assigned programs to include the following:

a. Program Status

b. Schedules and Milestones

c. Documentation

d. Testing

e. Points of Contact

f. Technical Issues

g. Actions Items

The contractor shall develop, update and maintain project status briefs, milestone charts and presentation material, including view graph and hard copy.

In addition, the contractor shall develop, update and maintain project status briefs, milestones charts and presentation materials, including view graphs and hard copy.

3.12.5 The contractor shall furnish technical comments and recommendations to the C^4I division at program reviews, in-process reviews, technical interchange meetings visits to hardware and software manufacturer's plants, and provide results in the form of minutes, trip reports, white papers or technical reports.

3.12.6 The contractor shall attend C^4I program meetings and reviews as directed by the COR. This involves developing a recommended agenda, establishing a system to track actions items, identifying problems/ issues, and developing meeting information, data and minutes.

3.12.7 The contractor shall draft, update, review and provide inputs to program planning and technical documentation as defined by technical direction letters. Provide the appropriate

documentation and review comments or recommendations to the C^4I Division program/project manager when directed by the COR.

4.0 REPORTS

4.1 Progress Reports

General. Progress report shall be submitted on a monthly basis and delivered to SPAWAR Systems Center no later than the 10th of the following month. The first report shall be delivered no later than the 10th of the month following the first full month of the contract.

4.1.1 Contents. Monthly progress report shall include the following items and data:

a. Cover sheet

b. Number of labor hours by total contract, delivery order number, labor categories used, and names of employees charge to each labor category.

c. Dollar amounts of material expended including outstanding monthly and cumulative commitments for total contract and each delivery order number.

d. Monthly and cumulative travel and per diem charge for total contract and each delivery order.

e. Monthly and cumulative total costs for contract and each delivery order.

f. Program summary.

g. Major milestone summary.

h. Data requirements status.

i. Action items.

j. Identification of new problem areas.

k. Status of previously identified problems.

l. Effort to be completed during next reported period.

m. Estimated total cost to complete.

n. Justification for cost increase or schedule slippage, if any, which may differ from previous report or the original estimate to complete specific efforts.

o. Identification of those delivery orders for which costs have exceeded 85% of the amount authorized.

4.1.2 Format. Reports shall be typewritten on commercial grade bond paper and shall include a cover sheet which shall identify the report by contract number, contractor's name, delivery order number and title, contract data requirements list (CDRL) number and title, period covered and date of preparation. Reports shall include charts, curves and other visual aids that may be necessary to define the status of the contract clearly.

4.2 Financial Progress Reports

Financial progress reports shall be submitted each Wednesday no later than noon, eastern standard time. The weekly reports will be transmitted electronically to COR via a contractor furnished work station, to provide the C^4I Division with current contract financial status.

5.0 CONTRACTOR FURNISHED FACILITIES.

5.1 The contractor shall maintain a facility within the Lexington Park, MD and Charleston, SC areas as required, to support SPAWAR Systems Center Code 61 to perform the tasks set forth for this effort. For this effort, the Lexington Park, MD and the Charleston , South Carolina local area is defined as that geographical area within one hour land commuting time of the SPAWAR SYSTEMS CENTER headquarters building in Hanahan. However, offers must demonstrate in their technical proposal how their facility and its location will satisfy the daily technical and management requirements of the contract.

5.2 In performing this contract the contract shall be required to perform various equipment integration efforts, component design engineering, breadboard and bench test, prototype fabrication, test bed design, and support services for government testing. The Government does not have facilities to provide the contractor to support this contract. Therefore the contractor shall provide the commercial facilities. The Government does not intend to retain the facility or take title after the contract is complete.

5.2.1 Because of the hands-on hardware effort, the facility shall contain assembly test, and storage space as well as attendant office space to support staff. The specific location does not have to be at one site. However, the facilities must be located within one hour commuting time from NAWC-AD, Patuxent River, MD in order to facilitate prompt delivery of equipment and personnel to and from NAWC-AD Patuxent River, MD (SPAWAR SYSTEMS CENTER Det) and SPAWAR Systems Center Charleston, SC. The facility to support this contract may not be located on government property. Facilities can be new or existing buildings, but must meet current Maryland State, South Carolina State and Federal commercial buildings codes The minimum facilities at each location are:

a. In Lexington Park, MD:

1. Minimum of 300 square feet of environmentally controlled office

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2. Minimum of 1000 square feet of environmentally controlled lab/work space.

b. In Charleston , SC:

1. Minimum of 300 square feet of environmentally controlled office/lab/work space.

2. Minimum of 1000 square feet of environmentally controlled lab/work space.

5.1.3 The contractor shall:

1. Have adequate storage for documentation produced for the contract or used as reference material.

2. Have Computer Aided Drafting (CAD) System compatible with AUTOCAD software from AUTODESK, Inc.

3. Have Graphics presentation capability compatible with Microsoft PowerPoint for Windows for Windows for PC compatible systems.

4. Provide all equipment required to perform the contract, which shall include but not be limited to the following: Office furniture, desktop microcomputers which are IBM PC compatible; software for word processing, database management, graphics and spreadsheets. The proper software for SPAWAR Systems Center is MICROSOFT OFFICE including Excel, Word, Dbase etc., In addition, the contractor must provide all required office equipment and supplies.

5. Provide lab integration equipment included but not limited to oscilloscope, Ohm-meter, power meters, signal generator, bit-error-test, protocol analyzers, logic analyzer.

5.2 The contractor shall furnish and be responsible for the maintenance and calibration of general purpose test equipment necessary to perform tasks assigned under this contract. This test equipment will be used to support C4I Division and TSC/ MOCC sites world-wide. The contractor shall provide all general purpose hand tolls required for performance under this contract.

5.3 The requirement for maintaining these facilities shall not be construed to mean that the Government will be obligated to pay any direct costs in connection therewith and further, the contractor shall not be entitled to any direct payment in connection with personnel set in readiness at or brought to such facility in preparation or in expectation of work to be performed under the contract. Payment for labor hours and materials will be made only for such hours and materials actually expended in performance under this contract.

6.0 DATA CALENDAR.

The contractor shall provide a data calendar that shows all data items required under the contract and TDLs and their delivery dates in matrix format. The calendar shall be updated monthly and provided with the monthly progress report.

7.0 MATERIAL

The contractor shall provide miscellaneous material when and to the extent authorized under the specifications of this contract. Examples of the miscellaneous material to be furnished by the contractor include, but are not limited to, the following items:

Tactical Computers; Minicomputers; PC Motherboards; Real Time Software; Hard Disk; Floppy Diskette Drive; Network Servers; Network Server Expansion; Tape Drives; Tape Backup Systems; Workstation Network Interface Card; Work Stations; Communications Server; VME Chassis w/ Control Backplane; Software Tools; Sound Cards; Speakers; Microphones; Routers; Digital Service Units; Protocol Analyzers; Shelters; Tents; Operating Systems; Modems; Fax Machines; Printers; Scanners; Keyboards; Central Processing Units (CPU); Power Supply; Generator; Monitors; Receivers; Patch Panels; LF-MF-HF Transmitters; HF-VHF-UHF Antennas; SHF Satellite Antennas; Satellite Antennas; Satellite Terminal; Digital Service Units; Waveguides; IT-21 compliance hardware/ software systems; Automatic Switches; I/O boards; Computer Memory; Networking Products; Surge Suppressor; System Console; Color Graphic Interface Card; Multi-Sync Color Monitor with Keyboard; Uninterruptible Power System; Power Generator; High Resolution Display; CD-ROM and Recorder; Power Converter; Videoconferencing Camera; Ethernet Switch; Tool Kits for Network and General Computer Repair; Television Set; Video Cassette Recorder; Video Converters; VGA Cards; VTC Software; Cameras; Televisions; CamCorder; Audio/Video Matrix Switcher; Electrohome Projector; Commercial Crypto; Cables (coax, fiber, etc.); Connectors; and Accessories.

The contractor will ensure the material, parts, and accessories provided under the resultant contract are Year 2000 compliant. If replacement items are provided, they are to be equal or superior to the original manufacturer's specifications and interchangeable without alteration.

8.0 ORDERING

Supplies or services to be furnished under this contract shall be furnished at such times as ordered by the issuance of delivery orders on DD Form 1155 by SPAWAR Systems Center Charleston.

When necessary, technical direction or clarification concerning the details of specific tasks set forth in the delivery orders shall be given by the issuance of Technical Direction Letters (TDLs) by the Contracting Officer.

All TDLs issued thereunder are subject to the terms and conditions of delivery order. The delivery order shall control in the event of conflict of any TDL, and cannot be modified by any TDL. The contract shall control in the event of conflict of any delivery order.

When mailed, a TDL shall be "issued" for purposes of this contract at the time the Government deposits the TDL in the mail, or, if transmitted by other means, when physically delivered to the contractor.

TDLs shall be issued in written form and shall include but not be limited to, the following information:

a. Date of TDL

b. Contract, delivery order and TDL number

c. Reference to the relevant portion or items in the statement of work

d. Technical direction or clarification

e. Signature of the COR and Contracting Officer. .

When, in the opinion of the contractor, the COR requests effort outside existing scope of the delivery order/contract, the contractor shall promptly notify the Contracting Officer in writing. The contractor will take no action until the Contracting Officer has issued a change to the contract/delivery order.

9.0 INCLEMENT WEATHER. The contractor is solely responsible for decisions concerning its employees at all locations in any inclement weather situation. Charleston, SC - Hurricane Warning and Patuxent River- MD Snow Warnings are to be addressed by the contractor at no additional cost to the government.

10.0 GENERAL PERSONNEL QUALIFICATION REQUIREMENTS

a. The following are descriptions of the experience and educational characteristics identified by the Government as necessary for respective labor categories. All Labor Categories require US Citizenship and eligibility for a DoD SECRET Clearance. An asterisk designates Key personnel (which require resume submission) (*).

b. Each employee who is directly charged to a labor category under this contract shall meet each of the following minimum qualification requirements for that labor category.

c. Each employee shall be fully capable of performing assigned functions in an efficient, reliable and professional manner.

d. An employee's experience may be credited to meet both General and Specialized Experience minimum qualification requirements provided it meets each of the minimum qualification requirements of each.

e. In order to be credited to meet Specialized Experience minimum qualification requirements (if any) for a particular labor category, an employee's experience must have been obtained in the field of endeavor indicated by the labor category title.

f. Progressive Experience is defined as work on increasingly diverse systems and equipment of more complexity and difficulty.

10.1 * <u>Program Manager:</u> (Resume - 1)

a. <u>Education</u>: Must have at least a Bachelor of Science Degree in Electrical/Electronics Engineering, Physics, Computer Science, Mathematics or Management.

b. <u>Progressive Experience</u>: Must have at least 10 years of experience in a management position dealing with TSC, MOCC or C^4I related systems.

c. <u>Specific Experience</u>: Must have at least five (5) years of the last seven (7) years of experience in Engineering Management and supervision of multiple projects performing systems engineering of P-3C, TSC, TCOMM, MOCC, MICFAC, MAST, Air Force DCCS System, JMCIS Video Systems, FMS and C^4I or related design, development and/or test and evaluation projects. Additionally, this position requires at least four (4) years of the last five (5) years of demonstrated experience in supervising, directing, reviewing and coordinating work performed by other contractor staff while maintaining effective liaison with Government technical and contracting personnel.

10.2 * Lead Project Engineer: (Resumes - 3)

a. Education**:** Must have at least a Bachelor of Science Degree in Electrical/ Electronic/ Computer Engineering, Physics, or Computer Science.

b. Progressive Experience: Must have at least six (6) years experience in systems engineering, development, production, or test and evaluation in the area of communications and systems engineering for the Navy ASW Aircraft, TSC, TCOMM, MOCC, MICFAC, TCO, JMCIS Video Systems, FMS, C3 and C^4I systems or subsystems or related projects.

c. Specific Experience: Must have at least four (4) of the last six (6) years experience must be associated with the development, testing, and analyses P-3C, TSC, TCOMM, MOCC, MICFAC, FMS or C^3 systems and subsystems. Additionally, the position requires demonstrated experience in conducting independent analyses and development of detailed testing and support requirements for TSC, TCOMM or MOCC. Additionally, this position requires at least three (3) years of the last (4) years of demonstrated experience in directing, reviewing and coordinating work performed by other contractor staff while maintaining effective liaison with Government technical and contracting personnel.

10.3 *Senior Computer Scientist: (Resumes - 2)

a. Education: Must have at least a Masters Degree in Computer Science in addition to a Bachelor of Science Degree in Electrical/Electronics Engineering, Physics, Computer Science or Mathematics.

b. Progressive Experience: Must have at least ten (10) years of practical experience in the design, development, and test and evaluation of P-3C ASW Aircraft, TSC, TCOMM, MOCC, MICFAC, TCO, FMS, C^4I, or related interface system computer hardware and software.

c. Specific Experience: Must have at least six (6) years of the last (8) years of experience shall include the design, development and test and evaluation of P-3C, S-3A/B, TSC, C^4I or related computer systems, equipment and software including test and evaluation of operational program software written in ADA, C, C++, UNIX, VX Works, Window NT, FORTRAN or Pascal. Additionally, this position requires four (4) years of the last five (5) years of experience in the design and development of computer systems and software in accordance with MIL-STD-498.

10.4 *<u>Senior Electronics Engineer:</u> (Resumes - 3)

a. <u>Education</u>: Must have at least a Bachelor of Science Degree in Electrical/Electronics/ Computer Engineering, Physics, Computer Science.

b. <u>Progressive Experience</u>. Must have at least ten (10) years experience in systems engineering, development, production, or test and evaluation of P-3C ASW Aircraft, TSC, TCOMM, MOCC, FMS, or C^4I computer/electronic systems, or related projects.

c. <u>Specific Experience</u>. Must have four (4) of the six (6) years experience must be associated with the development/operational testing and analyses of TSC or MOCC systems and subsystems, specially in the area of command and control. Additionally, the position requires three (3) years of the last four (4) years of demonstrated experience in conducting independent analyses and development of detailed testing and support requirements for state-of-the-art P-3C ASW Aircraft, TSC, TCOMM, MOCC, or C^4I systems.

10.5 *<u>Communications Engineer:</u> (Resumes - 3)

a. <u>Education:</u> Must have at least a Bachelor of Science Degree in Electrical/ Electronics/Computer Engineering, Physics, or Computer Science.

b. <u>Progressive Experience:</u> Must have at least six (6) years experience in the development, production or test and evaluation of communications and systems engineering of TCOMM or associated TSC or C^3, C^4I systems or subsystems.

c. <u>Specific Experience</u>: Must have at least three (3) of the last six (6) years of experience must be associated with TCOMM or TSC systems and subsystems, especially in the area of communications.

10.6 *<u>System Engineer:</u> (Resumes - 3)

a. <u>Education</u>: Must have at least a Bachelor of Science Degree in Electrical/Electronics/ Computer Engineering, Physics, or Computer Science.

b. <u>Progressive Experience</u>: Must have at least five (5) years experience in the development, production or test systems engineering of TSC, TCOMM, MOCC or C^4I and C^3 systems or subsystems.

c. <u>Specific Experience</u>: Must have at least two (2) of the last three (3) years of experience must be associated with the development, testing, and analysis of TSC, TCOMM, MOCC, TCO, MICFAC, MAST, JMCIS Video Systems, specially in the area of command, control, communication and computers.

10.7 *<u>Engineer:</u> (Resumes - 2)

a. <u>Education</u>: Must have at least a Bachelor of Science Degree in Electrical/Electronics Engineering, Physics or Computer Science.

b. <u>Progressive Experience</u>: Must have at least four (4) years experience in the development, production or test and evaluation of Navy aircraft ASW, TSC, TCOMM, MOCC, or C^4I computer/electronic systems.

c. <u>Specific Experience</u>: Must have at least two (2) years of experience associated with the development/operational testing and analysis of TSC, TCOMM, or MOCC systems and subsystems.

10.8 <u>Junior Engineer</u>:

a. <u>Education:</u> Must have at least a Bachelor of Science Degree in Electrical/Electronics Engineering, Physics, Computer Science or Mathematics.

b. <u>Progressive Experience</u>: Must have at least one (1) year of general engineering experience.

c. <u>Specific Experience</u>. None

10.9 *<u>Senior Project Analyst:</u> (Resumes - 3)

a. Education: Must have at least a Bachelor of Science Degree in Electrical/Electronics Engineering, Physics, Computer Science or Mathematics.

b. <u>Progressive Experience</u>: Must have at least five (5) years of progressive experience in C^4I IT equipment, software, digital computers or microprocessors.

c. <u>Specific Experience</u>: Must have at least two (2) of the last four (4) years of analyst experience in the design, development or test and evaluation of P-3C, TSC, TCOMM, MOCC, MICFAC, TCO, MAST or C^4I IT equipment, software, digital computers or microprocessors.

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OR, EQUIVALENT AS FOLLOWS (A):

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a. <u>Education:</u> Must have at least an Associate Degree in a related technical discipline.

b. <u>Experience</u>. Must have at least eight (8) years experience with analysis techniques, test and evaluation procedures or support requirements for P-3C, TSC, TCOMM.

c. Specific Experience. Must have at least six (6) of the last eight (8) years experience with analysis techniques, test and evaluation procedures or support requirements for MOCC, MICFAC, MAST, TCO, or C^4I and C^3 systems.

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OR, EQUIVALENT AS FOLLOWS (B):

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a. Education. Must have at least a High School Diploma.

b. Experience. Must have at least (15) years experience with analysis techniques, test and evaluation procedures or support requirements for P-3C ASW Aircraft, TSC, TCOMM.

c. Specific Experience. Must have at least eight (8) of the last fifteen (15) years experience with analysis techniques, test and evaluation procedures or support requirements for P-3C ASW Aircraft, TSC, TCOMM. MOCC, JMCIS Video Systems or C^4I and C^3 systems or subsystems

10.10 *Project Analyst: (Resumes - 2)

a. Education: Must have at least an Associate's Degree in a related technical discipline.

b. Progressive Experience: Must have at least eight (8) years of practical experience in support of Navy ASW Aircraft, TSC, TCOMM, MOCC, C^3 or C^4I systems development or production programs.

c. Specific Experience: Must have at least four (4) years of the last six (6) years experience shall be with analysis techniques, test and evaluation procedures or test support requirements for P-3C, TSC, C^3 or C^4I systems.

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OR, EQUIVALENT AS FOLLOWS:

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a. Education: Must have at least a High School Diploma.

b. Progressive Experience: Must have at least twelve (12) years of practical experience in support of Navy ASW Aircraft, TSC, TCOMM, MOCC, C^3 or C^4I systems development or production programs.

c. Specific Experience: Must have at least eight (8) years of the last ten (10) years experience shall be with analysis techniques, test and evaluation procedures or test support requirements for P-3C, TSC, C^3 or C^4I systems.

10.11 *<u>Project Communications Analyst</u>: (Resumes - 2)

a. <u>Education</u>: Must have at least an Associate's Degree in a related technical discipline.

b. <u>Progressive Experience:</u> Must have at least five (5) years of practical experience in support of Navy ASW Aircraft, TSC, MOCC, C^3 or C^4I systems development or production programs.

c. <u>Specific Experience</u>: Must have at least two (2) of the last five (5) years experience with analysis techniques, test and evaluation procedures or test support requirements for P-3C ASW Aircraft, TSC, TCOMM or C^4I and C^3 Communications systems.

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OR, EQUIVALENT AS FOLLOWS:

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a. <u>Education</u>: Must have at least a High School Diploma.

b. <u>Progressive Experience:</u> Must have at least ten (10) years of practical experience in support of Navy ASW Aircraft, TSC, MOCC, C^3 or C^4I systems development or production programs.

c. <u>Specific Experience</u>: Must have at least five (5) of the last eight (8) years experience with analysis techniques, test and evaluation procedures or test support requirements for P-3C ASW Aircraft, TSC, TCOMM or C^4I and C^3 Communications systems.

10.12 *<u>Senior Systems Analyst:</u> (Resumes - 2)

a. <u>Education:</u> Must have at least a Bachelor of Science Degree in Electrical/Electronics Engineering, Computer Science, Mathematics or Physics.

b. <u>Progressive Experience:</u> Must have at least five (5) years of progress experience of systems analyst experience relative to P-3C Navy ASW Aircraft, TSC, TCOMM, MOCC or C^4I systems or subsystems; design, development test and evaluation.

c. <u>Specific Experience</u>: Must have at least two (2) years of the last three (3) years experience in TSC, TCOMM or MOCC systems or subsystems; design, development test and evaluation.

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OR, EQUIVALENT AS FOLLOWS (A):

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a. Education: Must have at least an Associate Degree in related technical discipline from an accredited school.

b. Progressive Experience: Must have at least ten (10) years systems analyst experience in TSC, TCOMM or MOCC systems or subsystems; design, development test and evaluation.

c. Specific Experience: Must have at least five (5) years of the last seven (7) years experience in TSC, TCOMM or MOCC systems or subsystems; design, development test and evaluation.

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OR, EQUIVALENT AS FOLLOWS (B):

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a. Education: Must have at least a High School Diploma.

b. Progressive Experience: Must have at least fifteen (15) years of experience with system analyst techniques, test and evaluation procedures or support requirements for Navy ASW Aircraft , TSC, TCOMM, or MOCC systems or subsystems.

c. Specific Experience*:* Must have at least seven (7) of the last ten (10) years experience with system analyst techniques, test and evaluation procedures or support requirements for Navy ASW Aircraft , TSC, TCOMM, or MOCC.

10.13 *Systems Analyst: (Resumes - 2)

a. Education: Must have at least a Bachelor of Science Degree in Electrical/Electronics Engineering, Computer Science, Physics, or Mathematics.

b. Progressive Experience: Must have at least two (2) years experience in engineering, development, or test and evaluation of P-3C Navy ASW Aircraft Systems, TSC, TCOMM, MOCC, MICFAC, MAST, TCO or C^4I systems.

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OR, EQUIVALENT AS FOLLOWS:

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a. Education: Must have at least a High School Diploma.

b. Progressive Experience: Must have at least eight (8) years of systems analyst experience in design, development, or test and evaluation of P-3C ASW Aircraft Systems, TSC, TCOMM, MOCC, MICFAC, MAST or related C^4I systems.

10.14.1 *<u>Senior Computer Programmer:</u> (Resume - 1)

a. <u>Education</u>: Must have at least a Bachelor of Science Degree in Electrical/ Electronics/ Computer Engineering, Physics, Computer Science.

b. <u>Progressive Experience</u>. Must have at least six (6) years of practical experience in the design, development, and test and evaluation of systems or subsystems for the TCS, TCOMM, MOCC, or related C^4I and C^3 systems software written in Ada, C, C++, FORTRAN, knowledge of C language under UNIX OS and VX Works, Window NT are mandatory.

c. <u>Specific Experience</u>: Must demonstrate at least three (3) of the **last** six (6) years of experience include developing and maintaining software for the DCCS (formerly NAVMACS II) system. This experience shall include writing and maintaining protocols under JANOS PSOS or Other real Time operating system for the Ironics Cards. Also must have three (3) years of demonstrated experience in the design and software integration of computer and devices for TSC or MOCC in accordance with
MIL-STD-498.

10.14.2 *<u>Senior Computer Programmer:</u> (Resume - 1)

a. <u>Education</u>: Must have at least a Bachelor of Science Degree in Electrical/ Electronics/ Computer Engineering, Physics, Computer Science.

b. <u>Progressive Experience</u>: Must have at least six (6) years of practical experience in the design, development, and test and evaluation of systems or subsystems for the TCS, TCOMM, MOCC, or related C^4I and C^3 systems software written in ADA, C, C++, FORTRAN, knowledge of C language under UNIX OS and VX Works, Window NT are mandatory.

c. <u>Specific Experience</u>: Must demonstrate at least three (3) of the **last** six (6) years experience including developing and maintaining software for the UNIX based Link 11 system and Link/16 system. The experience shall include the design, test, and implementation of new changes per OPSEC 411.2 while ensuring the system meets the real time requirements for TADIC A and OPSEC 411.2. Also must demonstrate at least three (3) of the **last** six (6) years of experience include developing and maintaining software for the UB, JMCIS, or related OATS applications.

10.15 *<u>Computer Programmer II</u>: (Resumes - 2)

a. Education: Must have at least an Associate Degree in Computer Science Technology whose curriculum dealt directly with the programming of: digital computers, microprocessors or peripheral/interface equipment.

b. Progressive Experience: Must have at least six (6) years of practical experience in programming of digital computers, microprocessors, peripherals, or interface equipment; experience in coding, developing and testing in the following software languages : UNIX, Ada, C, Window NT, FORTRAN IV, FORTRAN 77, PASCAL, VMS, BASIC and CMS-2Y.

c. Specific Experience: Must have at least two (2) years of the last four (4) years of experience in the following software languages: UNIX, C, Window NT, and CMS-2Y.

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OR, EQUIVALENT AS FOLLOWS:

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a. Education: Must have at least a High School Diploma plus satisfactory completion of a Trade school or Navy Automatic Data Processing school.

b. Progressive Experience: Must have at least fifteen (15) years of practical experience in programming of digital computers, microprocessors, peripherals, or interface equipment; experience in coding, developing and testing in the following software languages : UNIX, ADA, C, Window NT, FORTRAN IV, FORTRAN 77, PASCAL, VMS, BASIC and CMS-2Y.

c. Specific Experience: Must have at least eight (8) years of the last ten (10) years of experience in the following software languages: UNIX, C, Window NT, and CMS-2Y.

10.16 *Electronics Technician III: (Resumes - 2)

a. Education: Must have at least an Associates Degree in Computer Science/Electronics Technology. Curriculum must have dealt directly with the maintenance, troubleshooting, or repair of: VME computers, digital computers, microprocessors or peripheral/interface equipment.

b. Progressive Experience: Must have at least twelve (12) years of practical hands-on experience in the maintenance, troubleshooting, or repair of VME computers, digital computers, microprocessors, peripherals, or interface equipment.

c. Specific Experience. Must have at least six (6) years of last eight (8) years, which must be in the maintenance and repair of P-3C Navy ASW Aircraft system,

TSC, TCOMM, MOCC, MICFAC, TCO, MAST systems, subsystems and equipment.

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OR, EQUIVALENT AS FOLLOWS:

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a. Education. Must have at least a High School Diploma plus satisfactory completion of an electronic trade school or Navy Electronics school.

b. Progressive Experience. Must have at least of fifteen (15) years of practical hands-on experience in the maintenance, troubleshooting, or repair of VME computers, digital computers, microprocessors, peripherals, or interface equipment may be substituted for the Education and General Experience requirements above.

c. Specific Experience: Must have at least six (8) years of last eight (10) years, which must be in the maintenance and repair of P-3C Navy ASW Aircraft system, TSC, TCOMM, MOCC, MICFAC, TCO, MAST systems, subsystems and equipment

10.17 Electronics Technician II:

a. Education: Must have at least an Associate Degree in Electronics Technology.

b. Progressive Experience: Must have at least eight (8) years of practical experience in the maintenance, troubleshooting, or repair of analog and/or digital electronics and communications equipment.

c. Specific Experience: Must have at least four (4) years of the last five (5) years of experience which must be in the maintenance and repair of P-3C Navy ASW Systems, TSC, TCOMM, JMICS Video Systems, MOCC, MICFAC and/or C^4I and C^3 electronics systems.

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OR, EQUIVALENT AS FOLLOWS:

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a. Education: Must have at least a High School Diploma plus satisfactory completion of an electronic trade school or Navy Electronics School.

b. Progressive Experience: Must have at least fifteen (15) years appropriate experience in the maintenance, troubleshooting, or repair of analog and/or digital electronics and communications equipment and troubleshooting/repair may be substituted for the education and General Experience requirements above.

c. Specific Experience: Must have at least seven (7) years of the last ten (10) years of experience which must be in the maintenance and repair of P-3C Navy ASW Systems, TSC, TCOMM, JMICS Video Systems, MOCC, MICFAC and/or C^4I and C^3 electronics systems.

10.18 Electronics Technician I:

a. Education: Must have at least an Associates Degree in Electronics Technology.

b. Progressive Experience: Must have at least four (4) years of progressive experience in electronics, troubleshooting, repair equipment, computer or communications technician courses.

c. Specific Experience: Must have at least two (2) years of practical experience in the maintenance troubleshooting, installation or repair Navy ASW Aircraft, TSC, TCOMM, MOCC and/or C^3 or/and C^4I related systems.

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OR, EQUIVALENT AS FOLLOWS:

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a. Education: Must have at least a High School Diploma plus satisfactory completion of an electronic trade school or Navy Electronics School.

b. Progressive Experience: Must have at least six (6) years appropriate experience in electronics, troubleshooting, equipment repair, computer or communications technician courses may be substituted for the Education and Specific Experience.

c. Specific Experience: None.

10.19 *Senior Logistics Technician: (Resumes - 2)

a. Education: Must have at least a Bachelor 's Degree.

b. Progressive Experience: Must have at least eight (8) years on various Navy programs involving the acquisition of logistics elements for system support, logistics planning to include establishment of maintenance and material management systems and equipment provisioning.

c. Specific Experience: Must have at least four (4) years of the last six (6) years in the following ILS elements: Test Equipment Support; Technical Data; Training and Training Support; Computer Resources Support; Technical Data; Training and Training Support; Computer Resources Support; and Packaging, Handling, Storage and Transportation. And also, in-depth knowledge of the Navy Supply

System, and integrated logistics support planning and implementation for Navy ASW Aircraft, TSC, TCOMM, JMCIS Video Systems, MOCC and/or C^4I related system or subsystems.

10.20 Logistics Technician

a. Education: Must have at least an Associated Degree.

b. Progressive Experience: Must have at least five (5) years of general and practical experience in progressively responsible technical duties which include: providing maintenance, inventory storage, cataloging, property use and material coordination through technical supply management, provisioning, data analysis, report preparation and integrated logistic support.

c. Specific Experience: Must have at least four (4) years experience in providing maintenance, inventory storage, cataloging, property use and material coordination through technical supply management, provisioning, data analysis, and report preparation for Navy ASW Aircraft, TSC, TCOMM, MOCC, and/or C^4I related systems and two (2) years of experience in integrated logistic support.

10.21 Computer Data/Technical Library Specialist:

a. Education: Must have at least a High School Graduate.

b. Progressive Experience: Must have at least three (3) years military or civilian experience using standard library techniques including: listing/ cataloging, filing, researching incoming and currently held library material, updating documents/publications and supplements, establishing and maintaining an inventory/check-out control system for library documentation, and ordering documents, publications and reference materials.

c. Specific Experience: None.

10.22 Quality Assurance/Control Specialist:

a. Education: Must have at least an Associate Degree in Electronic Technology.

b. Progressive Experience: Must have a least eight (8) with specialized training in quality assurance/quality control programs and two (2) years of quality assurance/quality control experience an various Navy electronic system, subsystem or computer software programs

c. Specific Experience: Must have a least four (4) years of the last six (6) in-depth knowledge and expertise in quality assurance/quality control programs. Experience must also include four (4) years on various Navy programs involving

state-of the-art electronic systems, subsystems or computer software and two (2) years of P-3C, TSC, C^3 and/or C^4I related systems experience.

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OR, EQUIVALENT AS FOLLOWS:

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a: Education: Must have at least a High School Diploma.

b. Progressive Experience: Must have at least twelve (12) years appropriate experience in quality assurance/quality control programs an various Navy electronic system, subsystem or computer software programs may be substituted for the Education and Specific Experience requirements above.

c. Specific Experience: None.

10.23 Word Processor II:

a. Education. Must have at least a High School Diploma, with clerical or business preparatory courses including: Typing, English , Business, Mathematics, Office Methods and Office Machinery.

b. Progressive Experience: Must have at least five (5) years experience in preparing word processing documents with extensive tabular statistical information, template proficiency, create/manipulate spread sheets.

c. Specific Experience: Must have at least three (3) years of practical experience in the preparation of manuscript copy. This experience must included: familiarity with scientific and technical terminology, engineering drawings and documents various cold-type processes and reproduction equipment. Ability to use automated typing equipment in the preparation of manuscript copy at a speed of at least forty (40) WPM. Ability to type in final and draft format from rough notes, technical papers, reports, rough drafts and other similar source material without intermediate rough drafts.

10.24 Illustrator III:

a. Education: Must have at least a High School Graduate.

b. Progressive Experience: Must have at least six (6) years practical experience in graphic arts and a demonstrated knowledge of graphic production equipment.

c. Specific Experience: Must have at least two (2) years of the last four (4) years of experience in preparing electrical/electronics drawings in support of engineering functions using AUTOCAD software/tools.

10.25 Technical Writer/Editor:

a. Education: Must have at least a Bachelor's degree in English, Journalism or Technical Writing.

b. Progressive Experience: Must have at least five (5) years of experience in the actual writing and editing of technical documentation dealing with Development, Test and Evaluation or Integrated Logistics Support of the above mentioned systems.

c. Specific Experience: Must have at least three (3) years of the last five (5) years in technical writing experience relative to TSC, TCOMM, MOCC, MICFAC , C^4I or associated interface systems engineering.

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OR, EQUIVALENT AS FOLLOWS:

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a. Education: Must have at least a High School Diploma.

b. Progressive Experience. Must have at least ten (10) years of technical writing experience relative to the Navy ASW Aircraft, TSC, C^4I or associated interface systems engineering.

c. Specific Experience. Must have at least six (6) years of the last eight (8) years of this experience shall be in the actual writing and editing of technical documentation dealing with Development, Test and Evaluation or Integrated Logistics Support of Navy ASW Aircraft, TSC, TCOMM, MOCC, MICFAC, MAST, C^4I or associated interface systems may be substituted for the Education and Specific Experience requirements above.

11.0 Required Standard of Workmanship

Unless otherwise specifically provided in this contract, the quality of all services rendered hereunder shall conform to the highest standards in the relevant profession, trade, or field of endeavor. All services shall be rendered by or supervised directly by individuals fully qualified in the relevant profession, trade, or field, and holding any licenses required by law.